THE MEMBERS MAGAZINE OF THE NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY

Terra

VOL. 18/NO. 3

Rattlesnakes

"...an unforgettable 'buzzzzzzz,' capable of non-stop performance up to two hours."

CURATORS AND COLLECTIONS

DR. DOWNS RETIRES

Dr. Theodore Downs, Chief Curator, Earth Sciences, who came to the Museum in 1952, retired officially on January 6. He was guest at a farewell party on January 10, attended by staff, trustees, and friends. The crowd was so large it spilled out of the Director's Room and surged into the Director's Changing Gallery. Dr. Downs was nominated Chief Curator, Earth Sciences, *Emeritus*, by the Foundation trustees, given a plaque, and a cast of a smilodon skull. He was subject of a twenty-minute roast by Acting Chief Curator, Earth Sciences, Dr. David Whistler, during which many gifts were presented. Dr. Downs will continue at the Museum as a Research Associate.

Dr. Theodore Downs, right, is congratulated by Leon G. Arnold, Acting Director.

NEW AND REFURBISHED HABITAT GROUPS (Second Floor-North American Mammals)

A new habitat group has opened devoted to a well-known but not always appreciated mammal, the striped skunk. A female with her three young are shown foraging on an early summer morning in Mt. Rainier National Park, Washington. Skunks eat a variety of food items, including many types of insects and small invertebrates, and thus constitute an important link in the ecosystem. The habitat group's taxidermy is by Tom Olmstead; background painting by Duncan Spencer, and foreground by Steve Hill and Jim Olsen.

The pronghorn antelope group has been extensively refurbished with a new background by Clark Provins, and a new foreground by Steve Hill and Charles Fischer. The three females, the two young, and the single male pronghorn (originally taxidermied by Paul Hill) are set in the early autumn in the Kaibab National Forest, situated northwest of Flagstaff, Arizona. The peaks of the San Francisco Mountains rise in the background. Once numerous and widespread, the pronghorn antelope has been severely restricted in its distribution. It's sad, for all pronghorns, modern and fossil, are only known from North America.

BETTER STORAGE

The Ethnology Section has just been awarded a grant from the National Science Foundation for improvement of storage conditions at LACMNH.

Designed specifically to aid museums whose research collections are in need of conservation, the NSF's Anthropology Program provides monies to help relieve overcrowded and environmentally unstable conditions found in many museums. LACMNH's grant covers the cost of more efficient shelving units as well as additional staffing to manage the ever-growing collections. As a result of this award, the Ethnology collections will be moved from a currently crowded attic situation to more spacious quarters in the new North Wing.

BUTTERFLY AND MOTH COLLECTION

The Entomology Section is pleased to announce the recent acquisition of the butterfly and moth collection of the late Dr. John E.S. Dockweiler, donated to the Museum by Mrs. Katherine Stearns Dockweiler and Miss Julia Stearns Dockweiler, his mother and sister, respectively. The collection of more than 14,000 specimens, amassed over a period of many years by personal collecting and by purchase, is rich in both domestic and exotic species, primarily butterflies. Many of the species are excessively rare in collections, and some are the first of their kind to be housed in the Museum's research collection.

SEARCH FOR GIANT ARTHROPOD

Last summer, Professor Derek Briggs of the University of London excited the scientific world by publishing an article in the journal *Palaeontology* that proposed the existence of a giant arthropod longer than 1 meter from Cambrian age seas about 570 million years old that is known only from some "legs" and other fragments. In November, at the Museum's invitation, he accompanied Edward Wilson and Philip Owen of the Invertebrate Paleontology Section and several scientists and students from the San Diego Natural History Museum and the University of California campuses at Riverside and Santa Barbara on an enthusiastic field trip for several (Continued on page 31)

Terra

The Members Magazine of
THE NATURAL HISTORY
MUSEUM ALLIANCE
at Los Angeles County
Vol. 18/No. 3

CONTENTS

A NARROW FELLOW IN THE GRASS 3

HERE BE DRAGONS 8

THE FIRST BOOK PRINTED IN THE ANTARCTIC 14

THE LUCILE MORRISON DOLL COLLECTION 24

COVER

Rattle—Western Rattlesnake. Lending Service, LACMNH

EDITOR
Dorothy H. Seligman
ASSOCIATE EDITORS
Kilbee Brittain/Harry Pack
CONTRIBUTING EDITORS
William A. Emboden Jr./Gretchen Sibley
DESIGN DIRECTOR
Gary R. Baker
EDITORIAL ASSOCIATES
Sage Belt/Jane Dart/Hailey Dart/Jeanne Duque/Mary P. Goodwin/Glenn Hiatt/Pat Herbert/Hannah Kully/William B. Lee/Richard Lipscomb/Genie Paul/Katie Schwarzenbach/Robert Spangenberg/Donna Tuttle/Edward Wilson/Elizabeth Wright
MUSEUM PHOTOGRAPHER
Larry Reynolds
STAFF ILLUSTRATORS
Mary Butler/Joseph Nakanishi

Printed by North Hollywood Printing Co., Inc.
Color separations by Computer Color Corp.
Typography by R S Typographics

All Rights Reserved. Reproduction in whole or in part without permission is prohibited.

A NARROW FELLOW IN THE GRASS

By BETTY BIRDSALL

Occasionally rides;
You may have met him,
—did you not?
His notice sudden is.*

"Oh, you should have no concern about meeting a rattlesnake on these cold nights!" My uninformed comment to a fellow cabin owner in the Mt. Pinos area who had already stumbled across five of the creatures led to a chat with Dr. Bob Bezy and Cindy Gall of the Museum's Herpetology Section, followed by an increasingly fascinated perusal of Laurence M. Klauber's opus magnum, the two-volume *Rattlesnakes: Their Habits, Life Histories and Influence on Mankind.*†

Requests for rattlesnake information lead the Herpetology Section's list of public inquiries. Perhaps you, the readers of *TERRA*, would care to share with me some of the results of Mr. Klauber's lifelong devotion to the study of these unique reptiles.

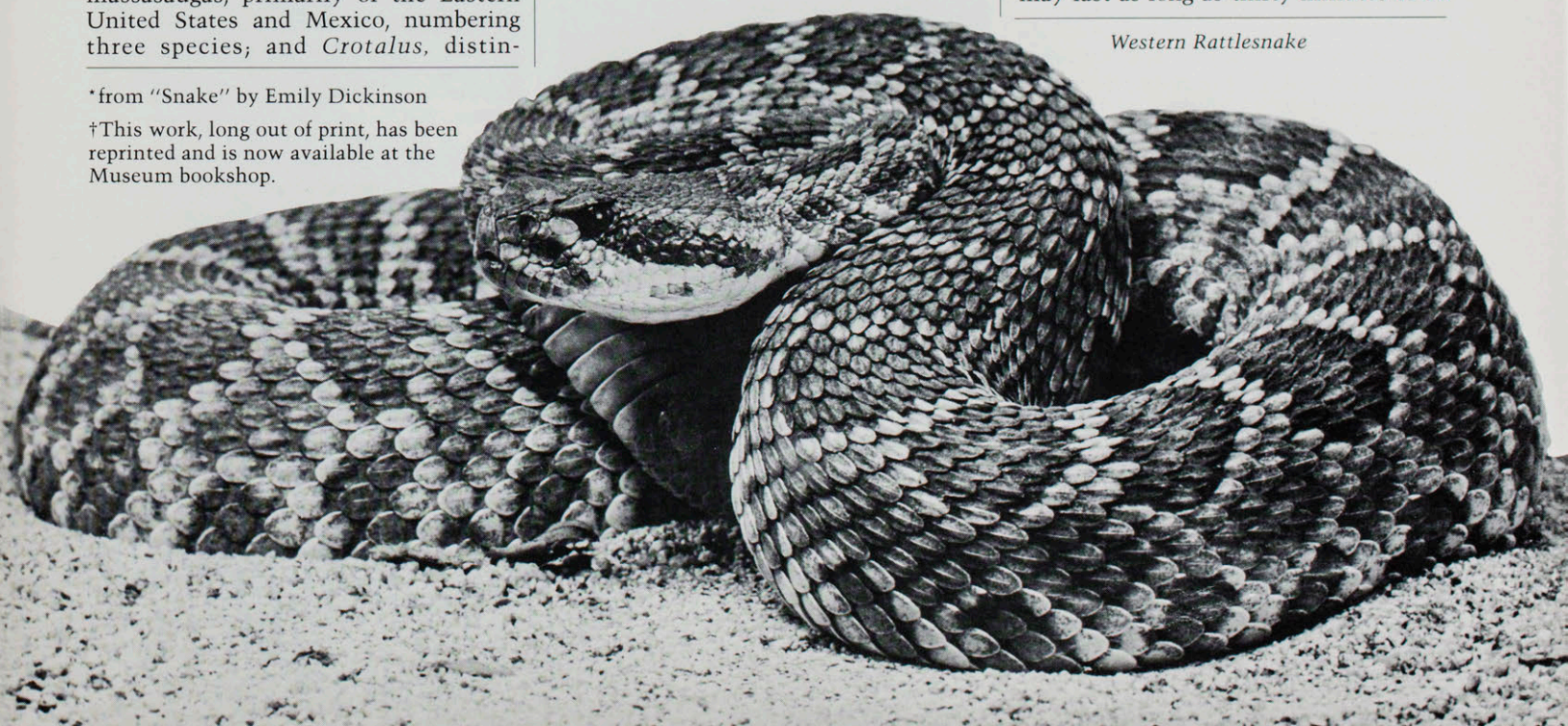
The poisonous vipers constitute two families (or subfamilies): the Viperidae (Old World "true" vipers) and the Crotalidae (pit vipers). The latter, named for their heat-sensing facial pits, are native primarily to the Western Hemisphere, but with some members occurring in Eurasia. Rattlesnakes are in this subdivision and are grouped into two genera: *Sistrurus*, the pygmy rattlesnakes, and massasaugas, primarily of the Eastern United States and Mexico, numbering three species; and *Crotalus*, distinguished by their larger size and smaller crown-of-head scales, with approximately twenty-eight species ranging from Canada to Argentina. The western rattlesnake *(C. viridis)* is the only dangerously poisonous snake to frequent the Pacific coast from Los Angeles north. Nearly all we Southern Californians have potential contact with the southern race of this species, so when not discussing rattlesnakes in general, it is of the southern Pacific rattlesnake *(C. viridis helleri)* that I write.

It is of little consolation to know that our subject is "small potatoes" compared with other rattlesnakes. The eastern diamondback *(Crotalus adamanteus)* has been reported to reach over eight feet in total length and may weigh as much as twenty-three pounds, while his departed Pleistocene relative from Florida, *C. giganteus*, was a monstrous twelve feet! In comparison, large male southern Pacific rattlesnakes are about four feet long, and reach a maximum of only four-and-a-half pounds. The young are eleven inches at birth, and females reach maturity when they are about two feet long. Unlike birds and mammals, snakes grow throughout their lives. Male rattlesnakes generally exceed females in length by fifteen per cent.

The southern Pacific rattlesnake is unusually variable in coloration, even within the same population, but darker individuals (some nearly black) are more often found at higher elevations and in areas of denser shrubbery (camouflage and more need for heat absorption?). Older individuals and those about to shed are also darker.

There is usually a dark streak through the eye, extending downward and backward toward the angle of the mouth. Along the back a series of large, irregular dark blotches widens to become bands on the tail. The last two tail bands often merge to form a long, dark region at the base of the rattle.

As in most snakes, the tail contains scent glands and a pair of retractable hemipenes in the male. In the rattler, the tail is of little help in grasping and climbing. It ends in a rattle, an impressive one, producing an unforgettable "buzzzzzzzzzzzzzzzzzz" capable of nonstop performance up to two hours. Composed of keratin—an ingredient of hair, nails and feathers—the rattle consists of a loosely-articulated "string" of lobed segments each of which has been shifted backward and retained at the time of skin shedding. Vibrations may be initiated by the snake when coiled, outstretched, at rest in its hole, crawling or, for that matter, *not at all*, even if a strike is imminent. Higher temperatures induce a greater vibration rate; a single series of vibrations may last as long as thirty minutes to an



Western Rattlesnake

*from "Snake" by Emily Dickinson

†This work, long out of print, has been reprinted and is now available at the Museum bookshop.

hour. With such a unique means of communication, is it not strange that snakes are quite deaf? Recent studies reveal that, although both external ear and tympanic membrane are lacking, most species hear within a restricted range in the low frequencies. Sensitivity to ground vibrations apparently alerts rattlesnakes most readily, and the rattle, it is believed, serves to warn potential predators not to attack and hoofed animals not to tread upon them.

The eyes! Scowling and ever alert, their narrow cat-like pupils regard the world with a cold, evil, unwinking and hypnotic stare. Or so it seems. It's no fault of theirs that nature provided an overhanging supraocular scale (thus the scowl) and no eyelids or nictating membrane (thus the stare). Superstition notwithstanding, they have no ability to hypnotize prey. Vision is, in fact, none too good, although they do have the ability to sense moving objects in dim light up to about fifteen feet.

Of equal or perhaps greater sensory value is the protrudable tongue which carries particles of air-borne material to the two pits (Jacobson's organs) located in the roof of the mouth. These in turn submit their chemical analyses to the brain. On each side of the head, in the area between nostrils and eyes, are the facial pits for which pit vipers are named. These are highly sensitive, short-range radiation receptors which alert the snake to both presence and direction of an object possessing a temperature differing from that of the surrounding air.

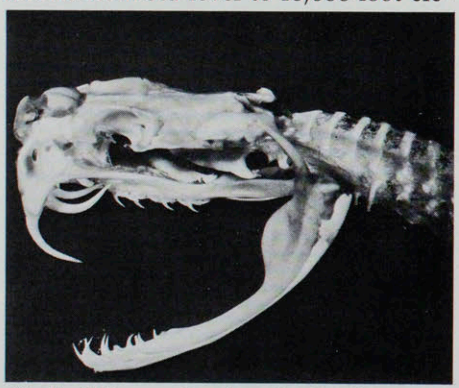
The skin is not, as believed by many, slimy and repugnant to the touch. It is covered by small, dry "scales" arranged in diagonal rows on the sides and back with large transverse ventral plates on the belly. Squamation (number and arrangement of scales) serves as a good means of species identification.

In an area with mild climate such as ours, a young, healthy and rapidly-growing individual may shed its skin as often as three times a year. Unlike most lizards which shed in patches, snakes peel their old skin off in one piece, turning it inside-out as it is removed. The process begins in the jaw area, includes the eye and pit scales, and proceeds down the body to the tail where a new rattle is uncovered. The process consumes a few minutes to a few hours, depending on health, activity and humidity.

Locomotion in snakes is fascinating but difficult to explain. It can occur via a lateral undulatory motion characterized by nearly horizontal waves in which the body follows closely the pattern taken by head and neck. On the other hand, prowling snakes often move mysteriously forward with their bodies held in a nearly straight line. This locomotion is made possible by a loose but muscular attachment between the skin and the rest of the body. The belly skin plates are drawn forward, the sharp back edges of the ventrals anchored in the ground, after which the body is pulled forward to realign itself with the skin. Snake locomotion may seem awkward when described in segments, yet actually, rattlesnakes move smoothly and their top speed equals man's moderate walking pace.

Venom which, in addition to defense, serves to secure food and aid in its digestion, is produced and stored in two glands located on either side of the head toward the back of the upper jaw. Ducts convey the venom to the long, hollow, curved fangs that function as syringe needles. Dual sockets, situated on both sides of the upper jaw, produce a continuous supply of fangs, alternates descending to become readily available when an operable fang is lost. A shortened maxillary bone facilitates rotation, allowing fangs to be folded back against the roof of the mouth when not advanced into striking position. With a jaw capable of opening to an impressive 180° fangs can be directed almost horizontally forward. Thus a snake bite may be more aptly described as a stab!

Homeland of the southern Pacific rattlesnake encompasses an area of southern California west of the inland deserts from sea level to 10,000-foot elevations in southwest San Luis Obispo and Kern Counties, south through Santa Barbara, Ventura, Los Angeles (including Santa Catalina Island), southwest San Bernardino, Orange, west Riverside, San Diego and extreme southwest Imperial Counties to northern Baja California.



Skull of Western Rattlesnake. Lending Service, LACMNH

Population censuses indicate grasslands, chaparral and cultivated fields are the more favored habitats with greatest abundance noted in the spring months of April, May and June. This spring activity is probably related more to the need for food and mating than it is to optimum temperatures. Functioning well in the range 65–95°F, with an optimum of about 80,° rattlers display more tolerance to cold than to heat. If thawed slowly, adults may revive after a few hours at 4°F and can endure days of 37° temperatures. Snakes are ectothermic with no internal heating and cooling mechanisms. Forced exposure to 106° temperatures will cause death within thirteen to twenty minutes.

Individual rattlesnakes usually sleep in rodent burrows, rock crevices or under logs, woodpiles and other sheltered places. In winter, especially at higher mountain elevations, they may congregate in dens in rock crevices and ledges. Warm days attract torpid individuals to bask in sunny spots. There is no month in which rattler activity has not been recorded. Even at higher elevations along the southern range, the active season extends to nine to ten months. Humidity may be a big factor, particularly in our summer-dry environment. There is more nocturnal activity in summer than in spring and fall. In the summer, especially in warmer areas, they may be abroad all night, though the hours from sunset until shortly after midnight are more popular.

Rattlesnakes are viviparous (giving birth to live young vs. oviparous — egg laying). Mating occurs in the spring. The 8–10 young per brood are born from August to October and each, making allowance for smaller volume, is relatively as poisonous as his parent. Field studies have been insufficient to determine average life span in nature; at the time of writing his book, Dr. Klauber mentions a southern Pacific rattlesnake still alive in the San Diego Zoo at eighteen years, seven months.

southern Pacific rattlesnake in typical chaparral habitat.

Snakes have many enemies. Man, red-tailed and sparrow hawks, coyotes and skunks are perhaps the greatest of them all, but the list also includes deer, antelopes, sheep, goats, horses, hogs (which eat them), dogs and cats, eagles, roadrunners, mockingbirds, herons, killdeer, and gopher snakes. One large tropical spider *(Grammostola)* kills rattlers within a few minutes and the *New York Times*, under dateline Ely, Nevada, 7/

27/38, reported that swarms of Mormon crickets killed and ate three.

The snakes are totally carnivorous. Small rodents, rabbits, birds wild and domestic, eggs, lizards and fellow snakes, even large insects like the Jerusalem Cricket *(Stenopelmatus fuscus)* provide sustenance.

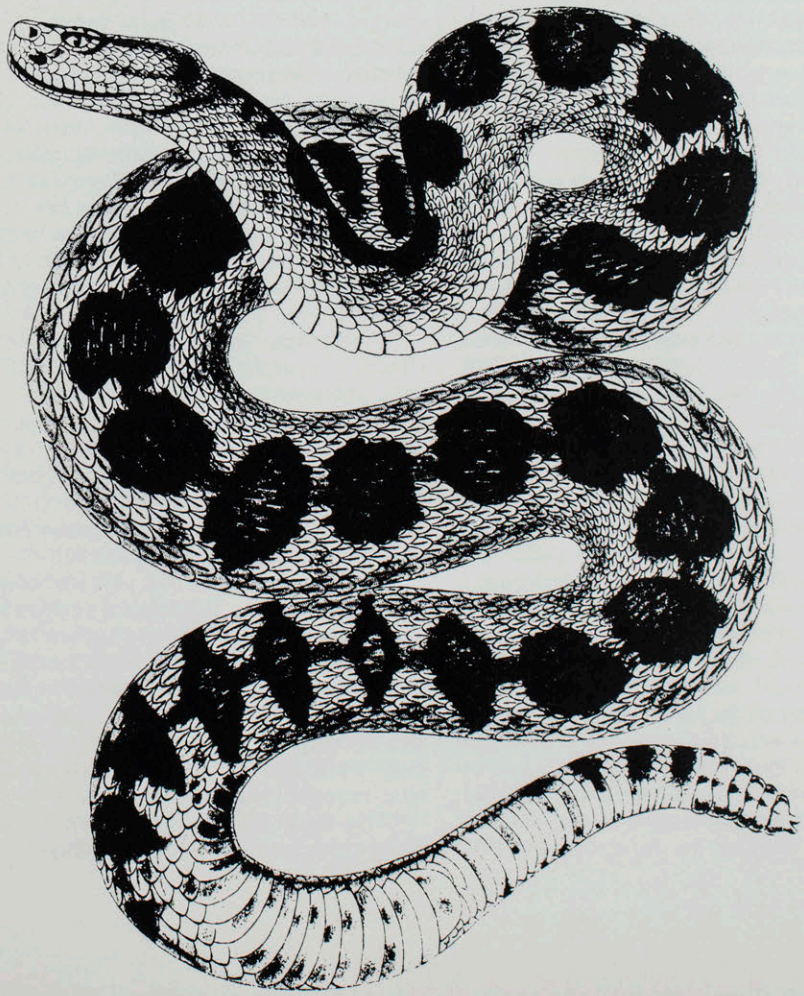
Egocentric mankind, so long obsessed with its own importance, has only recently begun to grasp the conception of unity and interdependence among *all* creatures. The rattlesnake, filling its own niche, serves as an important regulator in the balance of nature and deserves our respect and protection, as do all living things. When found in areas removed from human habitation — and *man* is the interloper—let it go in peace! It is with reluctance, then, that I mention two aspects of man's relationship with snake.

1. The use of rattlesnake meat as food. With such quaint names as "musical jack" or "prairie eel" it is described by some as having the taste of chicken, by others as veal. Fresh-killed meat should be soaked in brine overnight. There's a fifty per cent waste factor, a four-foot snake yielding only a pound of meat. Economic logic, then, suggests "Eat Chicken!"

2. The folklore which says a mortally-wounded rattlesnake does not die until sundown. A description of the events is, admittedly, impressive, but — Please *don't* rush right out to kill one just to test the theory! When head and body have parted company, the skin twitches, neck stub twists, eye pupils contract and, when approached, the mouth opens wide in a yawn or biting position with fangs erect. In one case, a southern Pacific rattler discharged venom into a hand forty-three minutes after decapitation. At temperatures from 68°–71°F, the decapitated body may writhe from four to nine hours. The heart, with a normal rate of forty-five beats per minute, continues irregular but detectable beats for usually a day, sometimes more than two. Explanation for this goosebump-raising performance is the greater relative importance of the various nervous centers located in the heart and spinal cord as opposed to the brain. Oxygen requirements are lower than those of warm-blooded animals, and there is no sudden change of temperature due to alteration of metabolism, so nerves and muscles continue to function in a near-normal fashion.

Man has for hundreds of years proposed the use of venom in treatment of a multitude of ills. No "cure" has survived the test of time. In "milking," a snake is caught immediately behind the head with a noose-stick, the head held resting upon a table. With a hooked metal bar the upper jaw is forced open and the head tilted in a biting position. The operator, with index finger, presses fangs against the inside of a cup, then massages venom glands with thumb and middle finger at ten-second intervals. Obviously, this is not occupation for the inexperienced. Subsequent milking produces less venom, so a new supply of snakes is desirable.

Crotalus lecontii *Hallowell. from: Zoological Report. Explorations and Surveys for a railroad route from the Mississippi River to the Pacific Ocean. War Department. 1859.*



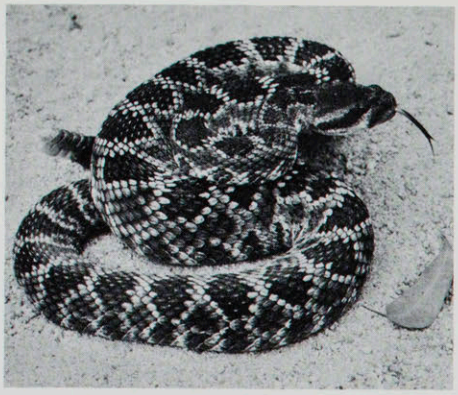
Happily, modern science has developed anti-venin to aid man in the treatment of snake bite. That is, unless the victim is allergic to the serum! An animal, usually a horse or donkey, is injected with increasingly large doses of venom, thus building up its immunity to the poison. An amount of blood insufficient to harm the animal is then drawn off, and the serum containing counteracting antibodies is segregated and prepared for injection into stricken humans and their pets. With exception of a relatively small amount of anti-venin, there is no steady demand for venom.

Throughout the centuries man has dreaded the poisonous reptile and sought in his usual ignorant but all-knowing fashion to counteract its ill effects. Pliny's *Natural History* (150 B.C.) mentions cures effected by quaffing wine in which was submerged the viper's head or liver, or, if preferred, applying mashed head to the wound. Our New England ancestors (1675) subscribed to this method, and downed fresh or dried-pulverized snake heart followed by a wine or beer chaser. New Yorkers utilized powdered crawfish.

Another prescription, also mentioned by Pliny, proved equally effective. R_x: Slit or split one live chicken (preferably black), apply bleeding flesh as a poultice. The flesh turns green or comb turns blue as venom is absorbed. Apply fresh chickens until colors disappear. Bury chicken carefully after use. If decapitated black rooster is used, feathers guaranteed to fall out after successful treatment. In event of chicken shortage, toads, frogs, rabbits or turkey buzzard crop may be substituted. Our Pennsylvania-New Jersey area ancestors utilized split mouse, pigeon, swallow, kid and lamb. As a slight variation, a cow, deer, skunk or black cat might be killed and the bitten arm plunged into its slit abdominal cavity until the animal was cold.

Propounding obvious logic that the Almighty surely provides a remedy for any ill if man is pious and wise enough to find it, Pliny listed 196 ways to prepare at least 100 different plants for treatment of snakebite. Some plants are still used: onions, garlic, indigo, rice, ash—in wine, also vinegar, honey and grease.

After its invention in 1738, ammonia was popular as a snakebite remedy. Turpentine and kerosene were also good



southern Pacific rattlesnake in defensive posture.

tries. Snake stones, porous bits of chalk, burnt bone or hartshorn wrapped in hay, and sheet copper charred in fire were others. A piece of wisdom supposedly originating in Baja California touted "scrapings of a crocodile's tooth." Unfortunately, crocodiles live nowhere near Baja California, but powdered human tooth could be substituted. Then there were the popular leeches, cauterization, submersion in ice water, scarification and cupping (heated, bell-shaped glasses placed over the wound, under which a sucking vacuum pressure built up as the air cooled inside).

In 1750, Caesar, a Carolina slave, gained notoriety by concocting a secret remedy for which he earned his freedom plus an annuity of £100. An infusion of plantain roots and horehound *(Marrubium)* was to be taken internally while tobacco leaf moistened in rum was applied to the bite. To prove the formula's worth, fellow slaves jumped into a tub of rattlers and also gained their freedom. Apparently no one examined the snakes. California shepherds believed in a strong dose of tobacco juice, salt and onion.

Lest we imply that all such gems are products of the distant past: Illinois, 1935 —Kill snake, wrap around the bite, using the entrails. Texas, 1946 — Steep snake skin in vinegar, wrap around wound; cut snake body into pieces, apply; victim bite off snake's head. New Mexico, 1947 — When bitten, grab snake by head and tail, bite in middle. The poison in the victim's mouth will kill the snake and cure the bite.

North American Indians looked upon the rattlesnake more with fear than reverence. Anticipating vengeance by a companion snake, they refused to kill rattlers, although at times they urged white men to do so for them. This was the belief of the Navajos as late as the 1950's. Some white men hung snake skins on their gates to keep out the Indians. Hopis and Mohaves held snakes responsible for rain and thunder. Certain American Indian tribes drank venom to increase sexual desire and potency. The Cherokees scratched members of their baseball teams with the fangs so that they might become as fierce and swift as a snake strike. Pueblo Indians of New Mexico applied venom to arrow tips. Southern California Shoshoni, Luiseños and Diegueños believed rattlesnakes were officers of punishment, carrying out penalties dictated by other gods for dereliction of religious observances. Sometimes the snakes delegated their authority to bears, wolves, mountain lions and nettles. And a rattlesnake would get them if naughty little Indian children didn't watch out.

Avid plant consumers, favorite Shamanistic treatments included:

Mendocino Co.:	rattlesnake weed *(Daucus pusillus)* chewed and placed on bite; and *Euphorbia ocellata;* snakeroot *(Osmorrhiza).*
San Luis Obispo:	rattlesnake weed,
(Chumash)	"Yerba de la Vibora" *(Caucalis microcarpa)*
(Luiseño)	*Euphorbia polycarpa*
(Gabrieliño)	herbs, ashes and fine dust from bottom of ants' nests
(Cahuilla)	"Golondrina" of Spanish derivation, believed to be *Euphorbia* (spurges)

Unfortunately, modern laboratory tests claim to have proven all to be valueless.

Not too many tender years ago a belief widely held was that oil of snake possessed penetrating and curative qualities par excellence. Was it not responsible for the lithe movements of the snake? In fact, a man undergoing intensive internal treatment might become so "soople" that he could barely walk. Purveyors of medicinal concoctions roamed the hinterland. "Hurry, folks! Step right this way! It's good for tumors, swellings, lameness, sprains and bruises; melancholia, alcoholism, gangrene, meningitis, epilepsy, rheumatism, hydrophobia, ringworm, sties and gout; arthritis, toothache, deafness, goiter, mosquito bites and colds, elephantiasis, corns, croup and callouses! Hurry! Hurry! Hurrrrrrrry!"

The curative power of alcohol in treatment of snakebite has known no peer. Mentioned in Pliny's great work of 150 B.C., a new popularity peak was reached in the mid-1800's, about the same time, it would seem, that the medicinal qualities of snake oil became so greatly appreciated. Firm was the belief that venom could not harm an intoxicated man. Venom, indeed, neutralized alcohol, alcohol neutralized venom. Continued signs of distress had one connotation: insufficient alcohol had been applied. R_x: one quart brandy *and* one-and-one-half gallons whisky to be taken within thirty-six hours after bite. In 1869, a standard Army prescription called for two ounces whisky applied internally every two hours. One Confederate officer went on record as questioning the relative value of the patient when the cure was selling for $450 a gallon. A popular vaudeville gag told of the tired rattler who had ten men on its waiting list. Prohibition killed that one.

How could man cherish so many useless notions for so many hundreds of years? First, there's the old admonition, "Don't just stand there, DO something!" Second, many patients recovered in spite of treatment. In California for the fourteen years from 1931 to 1944 there were nineteen recorded deaths from bites. Research indicates a ten per cent mortality rate for untreated victims, two to three per cent for those with modern treatment.

Even now, the gravity of a bite cannot be easily predicted. There are many variables: psychological impact on the victim; systemic resistance of victim (most vulnerable are the young and the infirm); allergy susceptibility of the victim; protection of clothing; nature of first aid applied; location of the bite (less danger in the extremities and in fatty areas, more in blood vessels and near vital organs); the level of excitement of the snake; the number of bites and depth of penetration of the fangs; quantity and quality of the venom (determined by the species, size and age of the snake, very young and very old snakes are less venomous); recent discharge of venom with consequent lessening of supply.

While best treatment methods of rattlesnake bite are still somewhat debated by medical experts, the following information and suggestions are offered by the fire departments of Kern and Los Angeles Counties, the American Red Cross and the Los Angeles County Health Department, 313 N. Figueroa St., Los Angeles 90012, in its booklet "Emergency Treatment for Rattlesnake Bite":

"...pit viper venom affects the circulatory system, destroying red blood cells and interfering with clotting.

"The bite of a pit viper is extremely painful and is characterized by rapid swelling of the involved area. If only minimal swelling occurs within thirty minutes, the bite will almost certainly have been from a nonpoisonous snake.

"A pit viper inflicts one or more puncture wounds, depositing venom beneath the skin... when the venom is absorbed, there is general discoloration of the skin...and marked pain and swelling. There is a general weakness, rapid pulse and sometimes nausea, shock..." There may be prickling sensation about the face, especially the lips.

"The tissue at the site of the wound often sloughs away, leaving a large, raw

Mr. David Gonzalez milks a rattlesnake for its venom at U.S.C.'s Laboratory of Neurological Research. Photo courtesy of Findlay E. Russell, M.D.

ulcer that may later require skin grafting or some other type of reconstructive surgery."

Our homes may be in rattlesnake prone areas. Many of us spend time in the out-of-doors. What can we do? First:

1. Don't fear rattlers beyond reason. They are not that common and, like other wild creatures, are eager to avoid man and to live in peace.

2. Don't kill harmless snakes.

3. Know the closest source of good medical help. Many doctors have no occasion to treat bite patients and may be unprepared.

At home, remember:

Rodent and rattler control go together. Eliminate retreats (wood and trash piles, etc.); fill gopher and squirrel holes with stones and dirt.

Standing water attracts snakes.

A cleared strip of land, from thirty to 150 feet wide, between yard and brush-covered areas, discourages snakes.

A fence of heavy galvanized ½" mesh hardware cloth 36" wide, inserted 6" into the ground, and closely-fitted gates, will keep snakes from the premises.

Seal openings in and under buildings.

Trim beneath shrubs to several inches above ground level.

Control the wanderings of small children and pets.

In the out-of-doors:

Avoid hiking alone.

Carry a small first aid kit, with whistle, knife and matches, perhaps an anti-venin kit too.

Camp in the open. Arrange clothing and bedding so that snakes cannot crawl inside during the night.

Wear calf-high boots and pants with loose legs.

LOOK BEFORE YOU LEAP

DO NOT lift planks, logs etc. with your hands.
DO NOT reach into any holes or crevices.
DO NOT reach above your head for climbing support
DO NOT step over a log. (You should step *on* it and look first).
DO NOT collect firewood at night.
DO NOT handle dead or injured snakes.
DO NOT count on a rattle to warn you of danger.
DO look first!
DO remember rattlers are active up to 11,000 feet in the southwest, in a wide temperature range.
DO remember rattlers can climb trees and swim.
DO remember, if you are a "follower-in-line," that you are more vulnerable.
DO avoid rock ledges.
DO beat under brush or fences first if you plan to crawl through.
DO hold still if a rattler is near. Moving objects are more vulnerable.

If, by unhappy chance, you or your pet are bitten by a rattler, following is a brief resume of treatment:

1. The objectives of first aid are to *reduce* the *circulation* of blood through the bite area; to *delay absorption* of venom; to *prevent aggravation* of the local wound, and to *sustain respiration.*

2. Be calm. Do not move involved body parts. If no help is at hand and you *must* move, move slowly. Blow an emergency whistle.

*3. If an arm or leg is involved, maintain it *below* the level of the heart. Remove rings, watches, etc.

*4. Wash area with soap and water. Apply antiseptic.

*5. Tie a constriction band (tie, belt, handkerchief) above the fang marks. Release every ten minutes for ninety seconds.

*6. An icebag or chemical coolant applied to the area will limit absorption of the venom.

7. With a sterile scalpel blade or knife, make incisions ⅛ to ¼" long through fang marks, just through the skin. Initiate suction with suction cup or mouth (if there are no sores or ulcers) for about an hour. (Bacterial contamination is a definite hazard.) (This procedure does little good if there has been a delay of twenty to thirty minutes.)

8. Administer NO alcohol.

9. Give sips of fluid, reassurance and artificial respiration, if warranted.

10. Get patient to nearest doctor or hospital without delay for possible anti-venin treatment. Telephone ahead.

"Cutting and suctioning of the bite is often more hazardous than the snakebite, and *constriction bands, cooling* and a *dependent position* are best if the hospital is less than two hours away."*

So, this is the harvest of a casual comment followed by an increasingly fascinated acquaintance with one of nature's creatures.

"Several of nature's people
I know, and they know me;
I feel for them a transport
Of cordiality;

But never met this fellow
Attended or alone,
Without a tighter breathing,
And zero at the bone."**

With due respect, I would not care to meet *Crotalus viridis helleri,* attended or alone, in the dark.

*From the Kern Co. Fire Dept.
**From "Snake" by Emily Dickinson

Acknowledgments:

The writer wishes to thank all who contributed to this effort, especially Russ Smith, reptile keeper at the L.A. Zoo, for his kind loan of two fine, live specimens; Robert (Lou) Raizk, for help in photographing them, and Dr. Robert Bezy, LACMNH's Associate Curator of Herpetology, for his knowledgeable guidance all along the way.

References:

Klauber, L. M. 1972. *Rattlesnakes.* Their habits, life histories, and influence on mankind. 2nd ed. Univ. Calif. Press, Berkeley, CA. 1533 p.

Wever, E. G. 1978. *The reptile ear.* Its structure and function. Princeton Univ. Press, Princeton, N. J. 1023 p.

Morris. R. & D. 1965. *Men and snakes.* McGraw-Hill, N. Y., N. Y. 224 p.

No more than a fond observer of nature, Betty Birdsall has been a curatorial docent at the Natural History Museum for fifteen years, with major interests in Entomology and Botany. This is her first TERRA article.

HERE BE DRAGONS

By WILLIAM EMBODEN

In days of old when fictional knights sought adventure in pursuit of dragons they consulted antique maps marked "Here be Dragons" as witnessed by those who had sought the unpastured beasts and returned alive. The alternative was to follow a path of smoldering fumets (try that one in your *Lexicon of Archaic terms and Medieval Scatology)* to the monster's lair. Doubters of dragons may consult the Biblical book of *Isaiah* in which several mentions of dragons are to be found. Those "dragons in their pleasant palaces" are totally neglected by zoologists; it would seem appropriate that they appear in some list of endangered species.

"Dragon" has been used by zoologists to characterize lizards in at least two genera. *Draco* (indicating dragon in both early French and Anglo-Saxon) is applied to small Indo-Malayan reptiles possessed of folds of skin projecting wing-like from the sides of the animal's body and supported by elongated ribs. These creatures seldom exceed ten inches in length and utilize these folds to glide from tree to tree. The other group of modern dragons is the giant monitor of the Dutch East Indies *(Varanus komodensis)* known as the "great dragon of Komodo" and distinguished by a length of more than ten feet and weight of over 350 pounds. The extinct *Varanus priscus* of Australia is a close relative, and fossil material suggests a length in excess of twenty feet. They just don't make dragons the way they used to.

Turning to the role that dragons played in Eastern civilizations, we may begin with the character "lung" (dragon) scratched on oracle bones dating to the Shang Dynasty (circa 1550 B.C.). Each subsequent period mentions dragons and each has its own interpretation of these creatures. As a generalization it may be said that dragons represent the deified forces of nature. In the Taoist religion, shrines of the dragon are placed along river banks, for the dragon-kings dwell in air, on land, and in the water. These earliest references to dragons portray them with five claws on each foot for beasts of the royal household; four toes for dragons of the upper strata of society; and three toes for the common man's dragon. In clothing this emblematic use was strictly enforced prior to the Ming Dynasty; later dynasties ameliorated the dragon foot-fetish laws, and four- and even five-clawed dragons are common. It is possible to find four- and five-clawed dragons on the same piece of Ching porcelain indicating the erosion of this interesting tradition.

During the Yuan Dynasty when Marco Polo traveled to China, the dragon had become extremely popular and the representation was a creature with a small head, a long serpentine neck and antlers. In subsequent representation the head becomes larger, the neck shorter, the eyes more prominent and the snout almost pig-like. Scholars use some of these characteristics to separate periods within a given dynasty. For example, in the Ming Dynasty, the Hung Chih period (1488–1505) and the subsequent Cheng Te period (1506–1521) show dragons with eyes represented on one side of the face even if the creature is shown in profile. In subsequent dynasties the mane increases in size and a beard becomes very common. All of these are derived from the doctrine of the "nine resemblances." Your basic everyday dragon should have the head of a camel, the horns of a deer, the eyes of a rabbit, bovine ears, a serpentine neck, a white belly of a frog, the scales of a carp, feet like a tiger with claws of a hawk. It must be versatile in air, on land, and in the sea. One need only go to China and gaze upon the large terracotta urns used to ship "1000-year-old eggs" and note that the motif is consistently the dragon that pursues the giant pearl in the sea. In this way, the dragon is used for purposes of identifying the contents of an unopened container.

Among the twelve animals that indicate cycles in Chinese years the dragon is the most powerful, for it is this creature that represents all of the forces of nature. The Chinese painter Chen Jung of the southern Sung Dynasty school of painting became famous for his paintings of dragons that were most often prowling about in grottos, woodlands, and about waterfalls. The differences in iconographic portrayal of the dragon have resulted in many art historians merely classifying them all as "chimaeras." The earliest of these chimaeras in sculpture appears at the tomb of Emperor Sung Wen Ti who died in 453. In spite of its weathered condition and burial in refuse for centuries, the creature may still be identified with the dragon. The grey limestone scales, the protuberances at the shoulders that indicate absent wings, fantastic extensions at the ears, all point to the dragon. Even more dragon-like is the creature found at the tomb of Emperor Ch'i Wu Ti who died in 493. The body is smaller than the aforementioned, but more elongated and dragon-like with short legs and a long tail. The head is fantastically carved and enormous; three sets of wings, numerous feathers and a long beard add to the bizarre quality. It would seem that the devolution of the beard came from a misinterpretation of earlier figures in which the tongue drooped out of the mouth. As the tongue eroded it appeared to be a beard.

Sixth century dragons generally have a more elongated neck and body with the wings reduced, the body seems drawn in a contraction of energy about to spring, the thorax is thrown forward to add to the serpentine figuring, and the head is usually thrown back in a wild fashion as though the beast were emitting a terrible sound. The mouth is always open on all of these creatures.

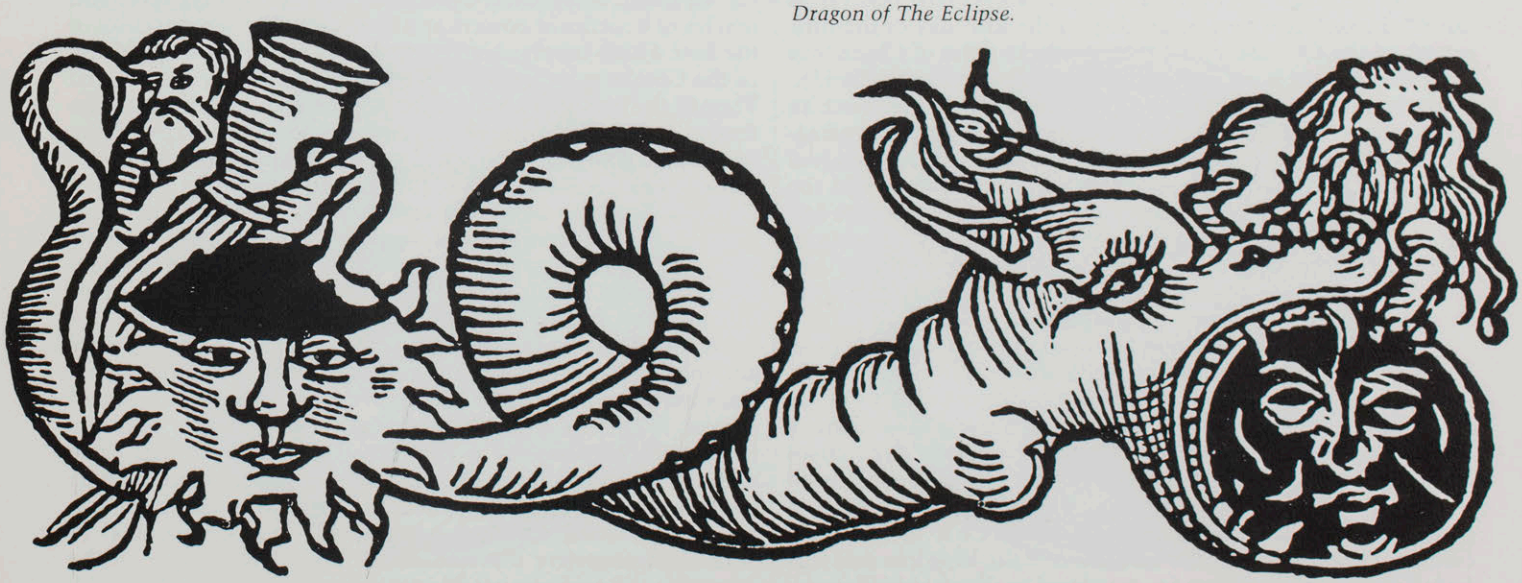
It has been a general assumption upon the part of most art historians that all of these "chimaeras" are in reality the lion in various states of modification. There are winged lions at the tombs of the brothers of Emperor Wu Ti, one of whom having died in 518 and the other in 522. It would seem that the lion is the result of the influence of Persian art on south China. The Assyrian-Persian lion motif is undoubtedly of independent origin, but later was used with the dragon in China as an emblem of power.

The mythological mind of the Ch'in Dynasty (221–206 B.C.) had already produced dragons with crested necks and wings of

Albrecht Dürer: St. George and The Dragon.

Chien Lung silk tapestry (1736–1795).

Dragon of The Eclipse.



flame at the shoulders and loins. This creature probably had earlier prototypes, but appears in marked contrast to the previous rather rigid ceremonial art; it is the beginning of sculptural forms in China. The subsequent Han Dynasty speaks of "the Blue Dragon of the West," but this refers to compass points in a set of decorations, for in contrast we have the "White Tiger of the East," "The Black Tortoise of the North," and the "Red Bird of the South."

By the Ching Dynasty (1644–1911), the Emperor was referred to as "The Dragon," and his throne was the dragon throne. Celestial power, harmony, virtue, and longevity were all added to the list of the dragon's attributes. Attitudes of the dragon were established with respect to other animals: the rat was to be overlooked, the ox was inferior, the tiger a formidable foe. The hare escaped its glance, the serpent was much disliked, the horse was as fast as the dragon and was pursued by him, the ram was found attractive by the dragon, the erratic monkey was an annoyance, the rooster was handsome and admired. The dog and dragon were both like humans and respected each other; the boar was disliked because he was considered filthy by all respectable dragons.

There are few animal tales in Chinese lore; most of these came from India (as did those of Aesop). The Chinese have preferred stories in which man is the protagonist. A notable exception is the tale of how the dragon got its horns:

> In the earliest days the cock had a wondrous pair of horns envied by all animals. A centipede persuaded the cock that if he were to loan his horns to the dragon this creature could enter heaven and tell them what it was like upon his return. The centipede convinced the cock that he had only to ask three times for the return of his horns and it would be done and then the cock might also be able to find his way to heaven. The following morning the dragon did not return and the cock cried "Give me back my horns" three times; this he has done every morning since that time to no avail. All of his descendants seek out and kill the deceitful centipede.

Another dragon tale concerns the dragon's visit to heaven:

> The dragon sleeps throughout the winter in the deepest recesses of the earth. During the second day of the second month the first rainstorm is felt and the dragon awakens with much roaring (thunder) and ascends into heaven. This takes place each year.

In Canton, *Tuen Ng*, or the day of the dragon boat festival, is the celebration of a new beginning on the fifth day of the fifth month of the Chinese year. In the northern parts of China it is little known, but is an important feast day peculiar to Canton. Boats of every size gather in the rivers and celebrants are in festive dress. Sounds of the Chinese flute are heard as are fragments of old songs. The boats are decorated in red and gold (red being the color that corresponds to the number five), and the lead boat carries the head of the dragon in all of its splendor and ferocity. Different organizations man the boats that constitute the body of the dragon in this exotic flotilla. Cymbals and sounding gongs are an indication for the dragon to begin its short but dramatic journey about the bays.

Today, in many areas the festival has devolved into a boat race, but in earlier times it was more elaborate and more significant. The leader of a crew wears white robes with the sleeves of his robe touching the ground. Deft movements in rapid succession create the illusion of the sleeve moving up the arm as he raises his white banner as a signal to move. The whole event is both theatrical and poetical. Some say it celebrates Ch'u Yuan, a court poet and councillor to the King of Ch'u in the third century. He grieved over the barbarism of the kingdom and was forced to leave the country. He wandered to the streams flowing toward the Yangtse and there composed a beautiful ode summarizing his life and philosophy. He bade farewell to king and country, and threw himself into the water as a sacrifice to his ideals. The people loved and mourned him, and in order that he be appeased they threw balls of rice wrapped in threads of five colors into the river as Ch'u Yuan had no food—it was being eaten by a dragon.

The elegies of Ch'u Yuan are sung to drums; their content reflects the death and resurrection theme common to most cultures. Among the Tai tribes in southern China, the death of Ch'u Yuan was acted out by the sacrificial offering of a bearded man, usually a stranger who might be found wandering in the province at that time. The stranger would be treated as a visiting dignitary, provided with a lover and fine food and clothing. On the day of sacrifice the body was cut to pieces and distributed among the villagers to be interred in their fields to ensure fertility. Another mode of finding such a victim was a mock battle between neighboring villages as the two would wade across opposite sides of a river throwing stones until one man was killed. The boat battle was added later and thought to be the origin of the original dragon boat festival in which a victim was drowned. The origins for the festival are many.

The day is of such significance that there are certain precautions observed by the superstitious. If you go to a rooftop you may see your own soul changing its skin like a snake; seeing this can cause a man to become ill and die. Covering the rooftop will cause a man to lose all of his hair. Beds and mattresses must be hidden from the sun or those who sleep in them will surely die. Blood of the invisible magical owl drips on its victims, who appear in sunlight. A child born on this day will surely kill its parents, as does the magical owl, and after their death these children do not decay. The only remedy is to feed the child on owl broth the day that he is born.

The day of the dragon is a festival of love and death, joy and sorrow, the promise of life and death, good and evil—all bound by the concept of the yin-yang balance in all things. One must use potions, especially sulphurous ones, to kill the five poisonous animals: the snake, scorpion, centipede, lizard, and toad. The snake may assume human guise and take a girl for his bride; the others will bring disease or pestilence. If any of these be fed upon vermilion dust and then are reduced to a powder, they will constitute a powerful charm against the evils of the day.

The original Greek stem *drakon* carried the meaning of "sharp sighted," and was connected with any large serpent. While in its original usage it was connected with evil beasts of bizarre forms, probably from Chaldean, Phoenician, Assyrian and Egyptian concepts, it came to be associated with seers and oracles of beneficent powers at a later date. The serpent cults of the East which involved large and deadly snakes probably came to the Greeks as exaggerated tales. The Chaldeans contributed Tiamat, the personification of chaos, who assumed the form of a dragon. In Egypt this dragon was Apophis, the great dragon of the world of darkness, vanquished by Ra. While these monsters came to the Greeks and subsequently the Romans as a brood of Gorgons, Hydras, Chimeras and Basilisks, these "dracontes" were also the embodiment of wisdom. Here a sort of western yin-yang principle operated. These sharp-eyed creatures found their abodes in the inner recesses of the earth in special temples inhabited by oracles.

We know that the temples of Aesculapius were underground and labyrinth-like. Indeed, the very name "Aesculapius" translates as "the mole." Such healers were associated with sacred snakes, and while it is assumed that these creatures were the subject of cult-worship, it has recently been found that early medical receipts among the followers of Aesculapius include serpent bones as healing powders and medicants. Recent investigation of snake cartilage has shown it to be beneficial in several degenerative diseases. In the Bona Dea temple on the Aventine at Rome comparable *sacri dracontes* were to be found.

The python at Delphi and the dragon of the Hesperides pre-

The innermost circle of Dante's Inferno after Orcagna's fresco in Campo Santo, Pisa.

Japanese family symbol or mon.

Mon *derived from an ancient Japanese textile design.*

sent two more interesting examples of the association of the dragon with fearful power. Being mighty, they guard sacred places with their sharp vision. A seventh-century Greek lawmaker was named Draco and his name has become synonymous with harshness.

It has been theorized that the form of dragons was derived from extinct as well as living beasts. Possibly some early find of saurian remains would suggest that such creatures had existed. Fossils were not unknown to the ancients. Dragon tales were not put to rest during that period of rebirth and enlightenment, the renaissance. Conrad Gesner, a Swiss naturalist of the sixteenth century, wrote of dragons as a part of the animal world known to naturalists. Dragon's blood, while actually from several plant resins such as *Dracena draco*, was widely sold as the blood of slain dragons and as such commanded very high sums.

Christianity took a dim view of the supposed wisdom of dragons, and condemned the lot as being malevolent. St. Augustine believed that for reason of his wisdom and power, the dragon could only be Satan. He further characterized the creature: "The devil is a lion and a dragon; a lion because of his rage and a dragon because of his wiles." The legends of killing dragons were sure to elevate a figure to power; St. Michael and St. George are only two such figures who will best be remembered for warring against dragons. Legend claims that the saintly Pope Silvester I put an end to the *immanissimus draco*, the dragon whose activities terrorized the populace of Rome.

Nordic mythology says that the dragon is the creature who withheld good things from men; a greedy guardian of evil reputation who must be slain by a hero such as a Siegmund, Beowulf, Sigurd, Arthur, Tristan, and the popular Sir Lancelot of Medieval chivalry. The dragon of King Arthur's vision "swoughs down from the sky," while that of Beowulf is a snake or "infernal worm." That creature slain by Sigurd was wounded "behind the shoulder," so we must presume it to be something more than a snake.

The iconography of the dragon in Homer's *Iliad* is associated with the gorgon, for on the shield of Agamemnon is a gorgon's head beside a three-headed snake or dragon. This was, presumably, to inspire fear in the heart of one's foe. This dragon emblem survived through the eighteenth century as ornaments on the muskets of European dragoons.

In Britain the dragon emblem was first used in 1191 by Richard I in doing battle with the "heathen beyond the sea"; the battle was lost. It is an imaginative nation that in this day can still preserve the dragon and the unicorn in their royal crest. In this century, the dragon and the viper (Wyvern) were incorporated into the armorial dress of the Prince of Wales.

Plinius secundus leaned toward the idea that the dragon was emblematic of vice and corruption. Leonardo da Vinci used this in his notebooks, for in his "Beastiary" we find: "Dragon: This twines itself around the legs of the elephant, and it falls upon him and both die. And in dying it has its revenge." This allegory was borrowed from Pliny as an emblem of virtue (the elephant) triumphing over vice (the dragon). Leonardo further instructs us in the making of a dragon in his "Precepts of the Painter" in which he writes, "If therefore you wish to make one of your imaginary animals appear natural — let us suppose it to be a dragon — take for its head that of a mastiff or setter, for its eyes those of a cat, for its ears those of a porcupine, for its nose that of a greyhound, with the eyebrows of a lion, the temples of an old cock and the neck of a water-tortoise." One cannot leave Leonardo's observations of the dragon without this additional quote from his "Beastiary": "These [dragons] band themselves together in companies and twine after the manner of roots, cross swamps with their heads raised and swim towards where they find better pasture; and if they did not thus combine they would be drowned. — So the union is made." He contrasts dragons to "serpents" and to "The Boa," the latter being a creature killed on the hill of the Vatican during the reign of the Emperor Claudius, "...and it had a whole boy inside it whom it had swallowed." (Possibly an African rock Python.) He also notes that the dragon has wings and claws as well as teeth that are able to bite open the throat of the elephant.

According to legend the father of King Arthur was named Uther Pendragon. It was he who had a vision of a flaming dragon in the sky which his seers or magi interpreted for him as a portent that he should come to the kingdom. This happened after the death of his brother Aurelius at which time he ordered two golden dragons to be made like those that he had seen encircled by a star. One of these he gave to the cathedral of Winchester (indicating that he did not think the creature to be without virtue), the other he used, according to *Flores Historiarum*, to carry into battle.

It is only rarely that one encounters the volume *Histoire des dragons et des escarboucles*, written by J. B. Panthot and published in Lyons in 1691. Panthot clarifies most western dragon lore in a rather categorical fashion, for the obvious discrepancies do not lend themselves to any unified history. In its most malignant and repugnant state, the dragon seems to be the Basilisk that breathes fire and splits rocks; in its most likeable state it is a creature of infinite inner vision and of an oracular nature worthy to be given over to one of the great cathedrals.

Even botanists have been fascinated by dragon lore, and the genus *Dracaena* commemorates the beast as does the specific epithet *draco*. *Dracunculus* is another genus celebrating the dragon. This member of the family Araceae has a cup-like inflorescence with a violet and greenish spathe within which the flowers are borne on a spike-like spadix. At maturity the flowers give off the scent of carrion or some fetid flesh. Dragons have not found many friends among botanists who have used the name to characterize rather outrageous plants.

One can see why some think the dragon is the most enigmatic beast in history. It represents both vice and virtue, confounding the mind of man.

William Emboden, a contributing editor of TERRA, flew into Hong Kong during the Year of the Dragon and the day of Tuen Ng, or "The Dragon Boat Festival," where he threw rice balls into the river to appease the local dragon. His natural penchant for extravaganzas and festivals coupled with an interest in fabulous beasts led to this article.

Contemporary paper cut of The Celestial Dragon (People's Republic of China).

Polychrome dragon from The Royal Pavilion, Brighton, England.

Albrecht Dürer: St. Peter and Satan masquerading as the Dragon.

Dragon vase in famille noir. *K'ang-hsi period.*

THE FIRST BOOK PRINTED IN THE ANTARCTIC

The material discussed in this article represents five years of original research by the author and is an important contribution to understanding the social history of the Antarctic.

By MARY P. GOODWIN

Ernest Shackleton's polar exploits and popularity as a leader are legend. His editing and publishing accomplishments are less well known. Yet they shed light on facets of Shackleton's character which are fascinating.

Few are aware that Shackleton was responsible for the first book printed in the Antarctic. Titled *Aurora Australis*, it was written, edited, illustrated, printed, and bound in a very small hut on the edge of the Antarctic Sea in the winter of 1908.

How did it occur, that on a serious exploration whose ambitious plan it was to be the first to reach the South Pole, a printing press would be included in the precious space allotment?

Shackleton had been third officer of the *Discovery*, Robert Scott's ship. This expedition explored the Antarctic in 1901–1903. During the long winter Shackleton had been editor of the "South Polar Times," a monthly typed paper, which, along with a much less intellectual sheet "Blizzard," was very popular among Scott's men. The writing, illustrating, and reading of them made the four-month dayless winter less wearisome.

Going back to the Antarctic consumed Shackleton. In a letter the day after his first child was born he wrote, "What would I not give to be out there (Antarctic) again doing the job, and this time really on the road to the Pole!". He also was bent on bettering anything that Scott had accomplished. When the opportunity for Shackleton to go south on his own expedition arrived in 1907, he determined to produce a real book, not just papers.

He carefully picked his men for the expedition, some of them from placement of newspaper ads. Four of these men were destined to become amateur publishers. They were Ernest Joyce, Frank Wild, George Marston, and Bernard Day.

Joyce, a thirty-three year old sailor in the Royal Navy, had been a member of Scott's *Discovery* voyage. He was signed on to be in charge of dogs and sledges and depot laying. On the later fateful *Endurance* expedition he would achieve the Antarctic record for sledging, more than 2000 miles, and receive the Albert medal for a heroic rescue.

Frank Wild, an able seaman in the Royal Navy and, like Joyce, a veteran of the *Discovery* expedition, was thirty-five years old. He had become Shackleton's close friend in spite of the difference in their backgrounds. As a capable leader and Shackleton's right hand he was in charge of all food and supplies. He later returned to the Antarctic on three more expeditions, with Shackleton and Australia's Sir Douglas Mawson. During World War I he was sent to Northern Russia and Spitzbergen because of his vast ice experience.

Twenty-six year old George Marston was on a walking tour in Cornwall when he saw Shackleton's newspaper ad for volunteers. He raced back to London and landed a berth. He had been a student at Regent Street Polytechnic Institute and was a certified art teacher. It was immediately apparent that his personality, physical strength and willingness, plus his ability as an artist would be assets. He was signed on to do topographic drawings and record the expedition in sketches though all members were expected to do some sledging as well.

An amusing note about Marston is in the preface of *Antarctic Days*, a book by James Murray and Marston printed in 1913. Shackleton writes, "Why I say Marston is not a scientific man is because of the following story. On our expedition we had a learned Professor and Geologist, who had undoubtedly a reputation for extreme politeness. Marston met the Professor one day, laden down with specimens of rock in a bag. Said Marston to the Professor, 'Can I carry your bag?' 'Oh, don't trouble, Marston, really it is too good of you.', but somehow or other the 50 lb bag was transferred to Marston's broad and willing shoulders. Instead of being content with the haul of rocks, the Professor began picking more of the debris scattered along the mountain side, and the 50 lb bag soon became 60 lbs. Marston thought he had had about enough of it, so every time that the Professor knelt down to coax rock out of its surrounding ice I saw Marston discharging from the bag a rock of similar size and weight. The Professor arrived at the hut fondly imagining that he had got everything that he had worked for, and received with profuse thanks the bag from Marston. For this reason I say that Marston is not a scientific man."

Bernard Day was a twenty-two year old motor engineer. He was the general handyman of the expedition. Shackleton was the first to take a motor vehicle to the Antarctic. This was a much strengthened car with high wheels, intended to pull sledges across snow and ice. Day could do anything with metal parts and often had to dismantle and put together the carburetor in freezing wind. He got the motor car up to eighteen miles per hour pulling a light sledge, quite an achievement on those surfaces in 1908. We will see how his inventiveness put the finishing touches on the book, *Aurora Australis*.

Since Joyce and Wild had had no experience in printing and Marston very little, Shackleton sent them on a crash program to learn the process at Sir Joseph Causton's firm in Hampshire (now Sir Joseph Causton and Sons, Ltd.). In three weeks they were rushed through courses in typesetting, the use of inks and dyes, design, cutting, acid baths and pulling. Practice with a variety of paper, pressure, and temperature gave these rookie compositors a just-sufficient introduction to the printing process. Sir Joseph lent the printing press and a small etching press. He also donated the rich paper, type, and ink to the expedition.

The men of this expedition of 1907–1909 sailed in the small ship *Nimrod*, wintered at the edge of the ice, and climbed for the first time the smoking 12,000-foot Mt. Erebus. They made two great sledging journeys, one of 1755 miles to within ninety miles of the South Pole

"The Hut in the Early Winter," from E. H. Shackleton, "The Heart of the Antarctic," Wm. Heinemann, London.

and the other to the South Magnetic Pole, 1260 miles to the northwest and back. In addition, Shackleton's was the first Antarctic base to become an international postal region. He was sworn in as postmaster before a New Zealand magistrate and handed a supply of one-penny New Zealand stamps overprinted "King Edward VII Land" in green. When the *Nimrod* left the men, their properly franked and dated letters went with her. And before the returning of spring light and sledging, Joyce, Wild, Marston, and Day, with Shackleton as the editor, had completed the first book printed in the Antarctic.

The conditions under which *Aurora Australis* was printed are described in *Antarctic Days* as follows:

"It was winter and dark and cold. The work had to be done in the intervals of more serious occupations, in a small room occupied by fifteen men, all of them following their own avocations, with whatever noise, vibration and dirt might be incidental to them."

The immense difficulties of this job in a hut almost impossible to keep clean can be imagined. "Fifteen men shut up together, say during a raging blizzard which lasts a week. Nobody goes out unless on business; everybody who goes out brings in snow on his feet and clothes. Seal blubber is burned, mixed with coal, for economy. The blubber melts and runs out on the floor; the ordinary unsweepable soil of the place is a rich compost of all the filth, cemented with blubber... Dust from the stove fills the air and settles on the paper as it is being printed. If anything falls on the floor it is done for; if somebody jogs the compositor's elbow... and upsets the type into the mire..."

From the outside the hut at Cape Royds (not far from the present day base of McMurdo) resembled a pile of packing cases mixed with a coal dump and covered with a gable of tar paper. The outer walls of two sides did in fact consist of cases, fuel and stores. Manchurian ponies were stabled on another side, the dogs not far. A store room, also constructed of packing cases and bales of fodder, partially sheltered the fourth side. Rope stays supported a slender iron stove pipe.

If the outside was a bleak scene, inside the tiny hut was an ingenious crowded arrangement of men and equipment. Around the walls were various utilitarian and living compartments, and the space in the center was taken up by a mess table and benches. When all was working confusion the table was suspended just below the roof and secured with slings. The table came down for meals or a large group project. "Up under the roof, it occupied much the same position as the sword of Damocles ... it once gave way and landed the majority of the tinware on the heads of one or two members of the party. The table in itself is a curiosity,

built rather ingeniously of the lids of cases, and in one place the legend informs the diner that the table contains a 'theodolite,' some 'ranging poles'... while another legend remarks that it is, 'Only to be opened on Christmas Day.' etc." ("Trials of a Messman," by Raymond Priestly, in *Aurora Australis)*

The fifteen men lived in cubicles ranged along each side of the hut. The "walls" were heavy duck cloth hung from wires strung the length of the hut and stretching seven feet to attachments on the outside walls. Each two-man bedroom was thus seven by six-and-one half feet! The variety of hand-constructed bedroom furniture, logistics of stowage, decorations and living arrangements reflected the differing personalities and fancy of the occupants of these quarters. Shackleton had the end "room" to himself.

The most orderly cubicle was called "No. 1 Park Lane." The doctors' duck partition had a magnificent painting of Napoléon and Joan of Arc, the two occupants of this space being interested in French revolutions. The beds ran the gamut from Indian Army collapsible bamboo and canvas, plain fitted boards, to painted empty dog biscuit boxes, and stacked petrol cases, from which the smell eventually disappeared.

In each "bedroom" was the professional and personal paraphernalia of both men, whether rocks, ice axes, chronometers, medicines, wet fur boots, photochemicals, the complete works of Dickens, curtains and blue ribbons, biological equipment and captures, and various stacks of things on and under or hanging over the bunks. One such "home" was called "the pawn shop," as a multifaceted collection occupied all of the space except when the two men were asleep amid the assortment.

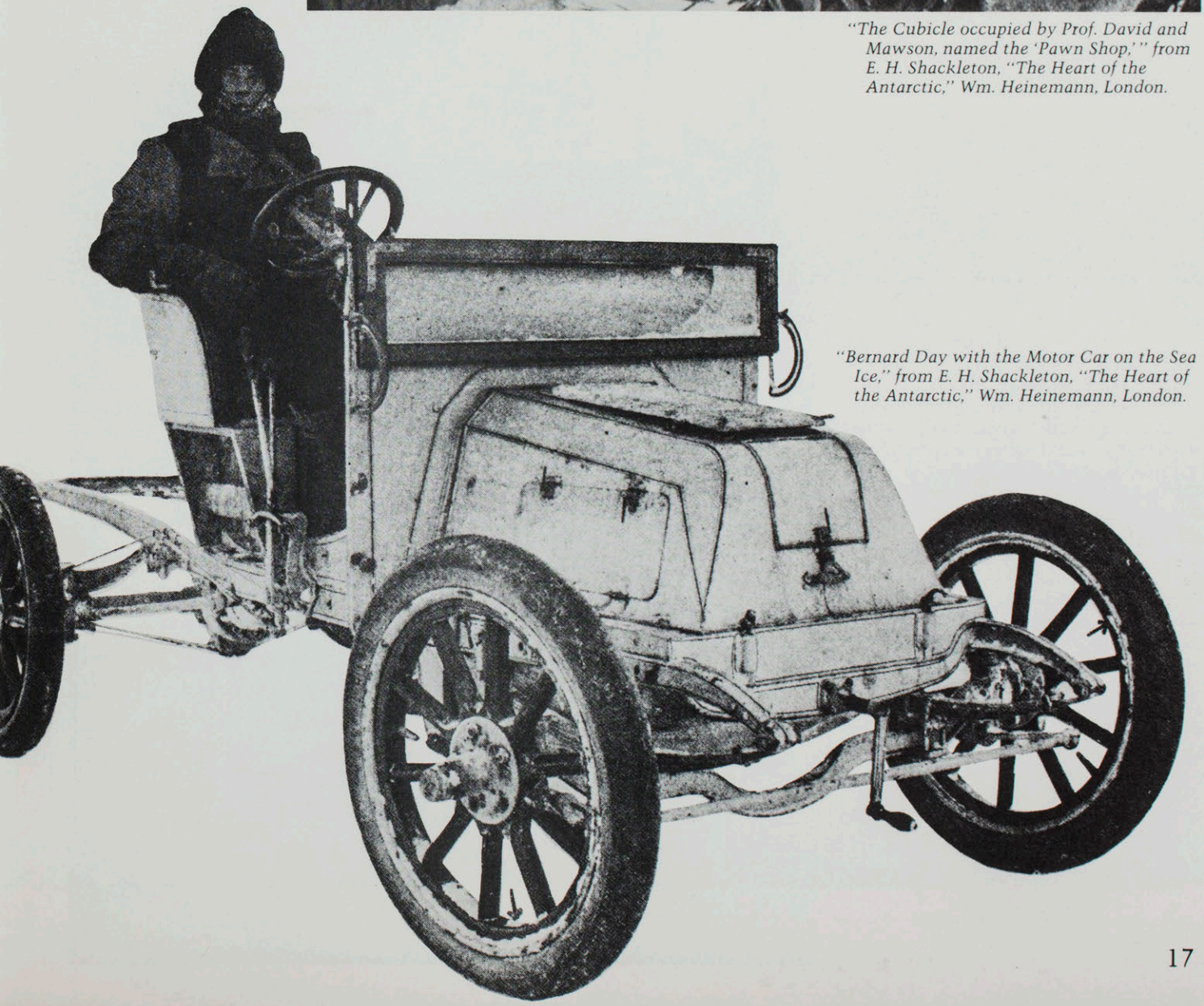
Marston and Day had one wall of painted packing cases, bunks upholstered with wood shavings and covered with blankets. The wall boasted a painting of an Edwardian scene, a glowing fireplace and ornate mantel with a delicate vase of flowers on it. "The dividing curtain between this cubicle and No. 1 Park Lane did not require to be decorated for the color of Joan of Arc and portions of Napoléon had oozed through the canvas." *(The Heart of the Antarctic,* Shackleton, William Heineman, London 1910) Occupying much of the space left in the six-by-seven-foot room was the small etching press.

"Type Case and Printing Press in Joyce and Wild's, 'Rogue's Retreat,'" from E. H. Shackleton, "The Heart of the Antarctic," Wm. Heinemann, London.

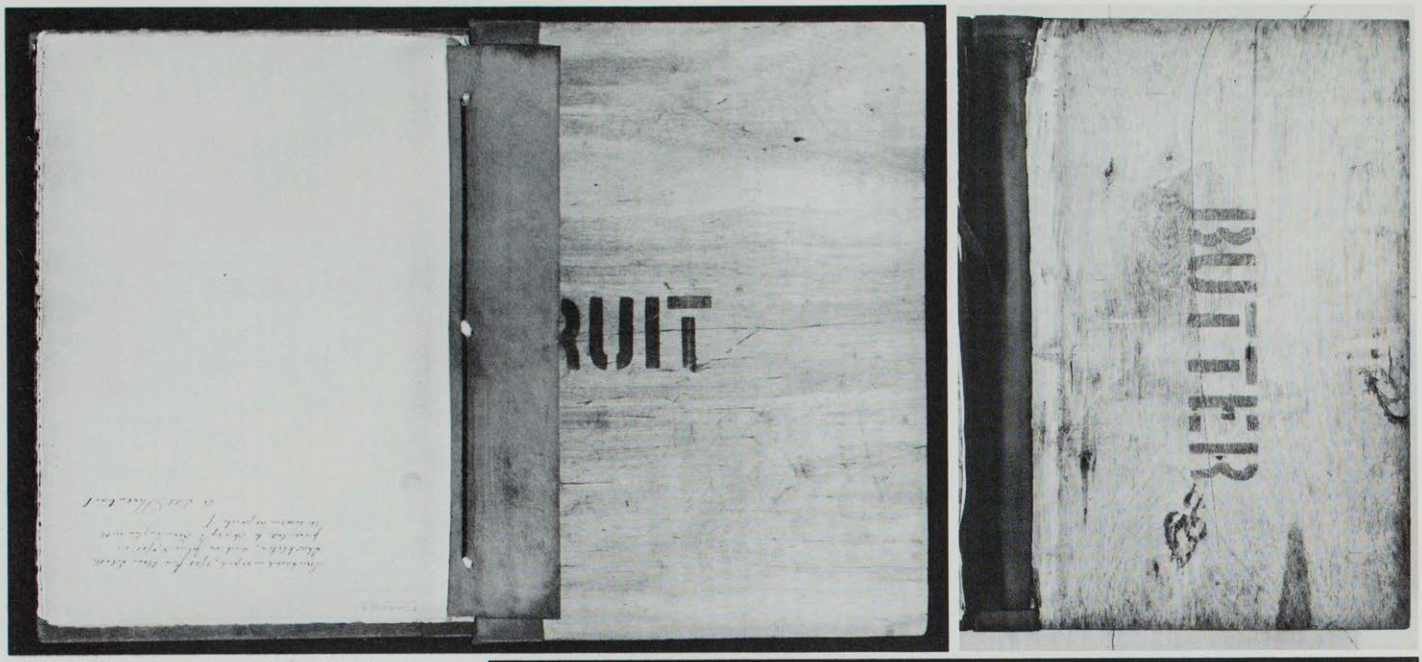
Most disorderly of all was the printers Joyce and Wild's "Rogues Retreat." The scene on their front "wall," painted by Marston (as were all the others), was simply two very tough beer drinking characters. Crowded in with their gear in terrible disarray were the type case, printing press, and sometimes a foot-peddle sewing machine on which they made sledge harness for their spring trip towards the South Pole.

Using original contributions from most members of the expedition, Joyce and Wild began slowly, and within two weeks could set type for and print two pages a day. A lamp under the type case

"The Cubicle occupied by Prof. David and Mawson, named the 'Pawn Shop,'" from E. H. Shackleton, "The Heart of the Antarctic," Wm. Heinemann, London.



"Bernard Day with the Motor Car on the Sea Ice," from E. H. Shackleton, "The Heart of the Antarctic," Wm. Heinemann, London.



"The Bottled Fruit Copy," The Huntington Library, San Marino, California.

kept it warm enough so that they could handle the cold metal. Murray describes how they kept the ink usable: "The temperature varies from cold to colder. If it is too cold the ink will get sticky and freeze. Joyce and Wild set a candle beneath the inkplate, and by moving the candle about, they can keep the ink more or less fluid."

In examining three copies of *Aurora Australis* the author could see the difference between the pages in contrasting copies, but it is remarkably fine work considering the conditions. The author knows of seven copies of some twenty five to thirty which were bound. The ones studied are at Christ's College, Cambridge; The Scott Polar Research Institute, Cambridge; and The Huntington Library, San Marino, California.

Marston had only a small etching press for both lithography and etching. He used aluminum plates for imposing. His illustrations and delicate illuminated letters with floral backgrounds at the beginning of each piece are of excellent quality. The designing of the book and the ordinary printing could be done during the day or evening, not so the delicate art work. James Murray, who used the same night hours for biological studies, watched Marston work. Without the days vibration and moving dust and dirt, and with only two or three "loafers around the stove," the artist sketched and carefully accomplished the etchings and lithographs, printed and pulled them. Murray says, "I had the opportunity of watching his tribulations...I do not pretend to know the nature of the special difficulties

"The Book, 'Aurora Australis,'" The Huntington Library, San Marino, California.

◁ *"The Inside of the Front Board," Scott Polar Research Institute, Cambridge, England.*

that the climate introduced into lithography, but I know this, that frequently I've seen Marston do everything right—clean, ink, press—but for some obscure reason the prints did not come right. And I've seen him during a whole night pull off half a dozen wrong ones for one good print, and he did not use so much language over it as might have been expected."

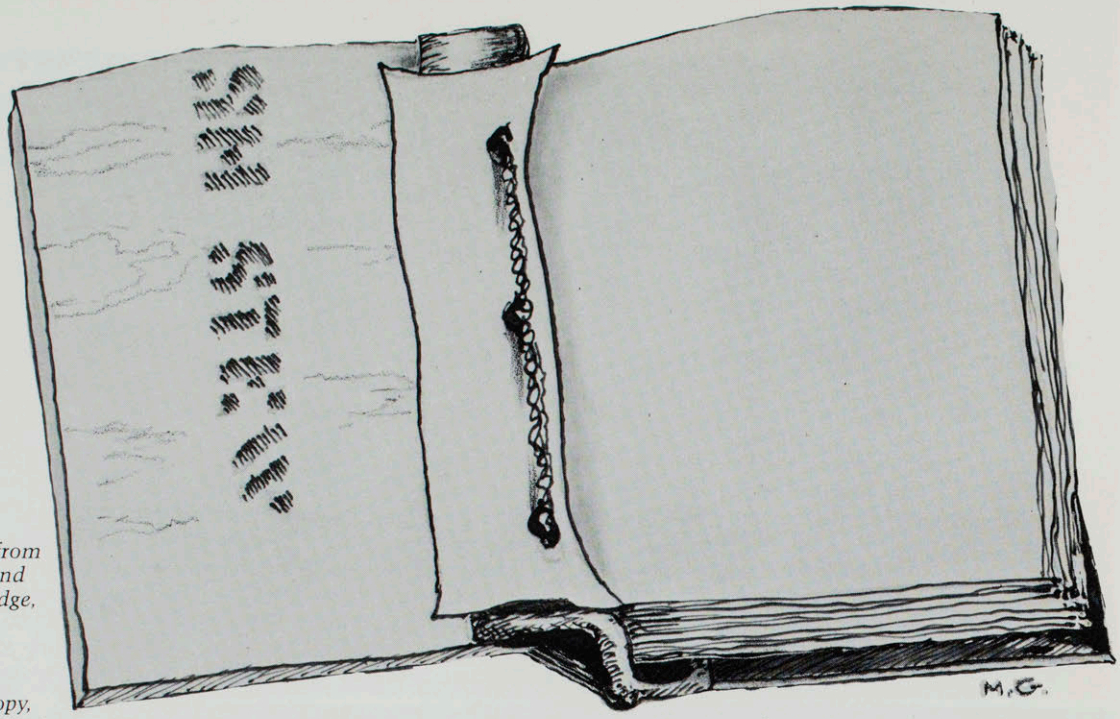
Aurora Australis has some 120 pages, and while these were being printed, the young engineer set to work to devise a binding. Three holes were punched in each page and then all were sewn together with a strong green twine. Day used packing cases for the books' boards. The cases were made of Venesta board, a primitive kind of plywood, three layers of birch or other hard wood impregnated with waterproof cement. It is light, strong, and weatherproof. Bernard Day had his choice of 2500 packing cases. He cut, cleaned, and planed the wood; then softly beveled the edges and polished the outside to a sheen. Brown leather covers the spine and edges of the front and back boards. The spine is imprinted, *Aurora Australis*, and bears their invention, a Penguin Press trademark.

There is a difference of opinion about how many books were printed and bound in the Antarctic. We know that there were extra pages printed beyond the number bound. In studying the sources, including Marston and Wild, I believe that between seventy five and 100 copies of each page were printed, but that only twenty five to thirty copies of the book were sewn and bound. This makes it a very rare book, indeed.

The quality and flavor of the writing differs widely. In 1908, quite naturally, some of the poetry sounds like Kipling or Robert W. Service. This is perhaps appropriate coming from early "heroes" of the Antarctic.

A brief collation: The first blank end paper usually has an inscription as these few volumes were reserved for the members of the expedition, and many were given by them to family and friends or sponsors. The "Butter" edition (the word appears on the back inside board) had been Lady Shackleton's and was given to the Antarctic historian, Hugh Robert Mill, then by him to the Scott Polar Research Institute in Cambridge, England. The "(Bottled F)ruit" copy (word inside front board) was Edith Shackleton's, purchased by A. S. W. Rosenbach and given to Henry E. Huntington. It is one of the more unusual volumes in the rare book section of the library. The "(Ir)ish Stew" copy (inside front board) belonged to Sir Raymond Priestley, geologist on the *Nimrod* expe-

"Marston in his Bed," from E. H. Shackleton, "The Heart of the Antarctic," Wm. Heinemann, London.



"Ink Sketch of the 'Irish Stew' copy," from the book belonging to the Masters and Fellows of Christ's College, Cambridge, England. Mary P. Goodwin, artist.

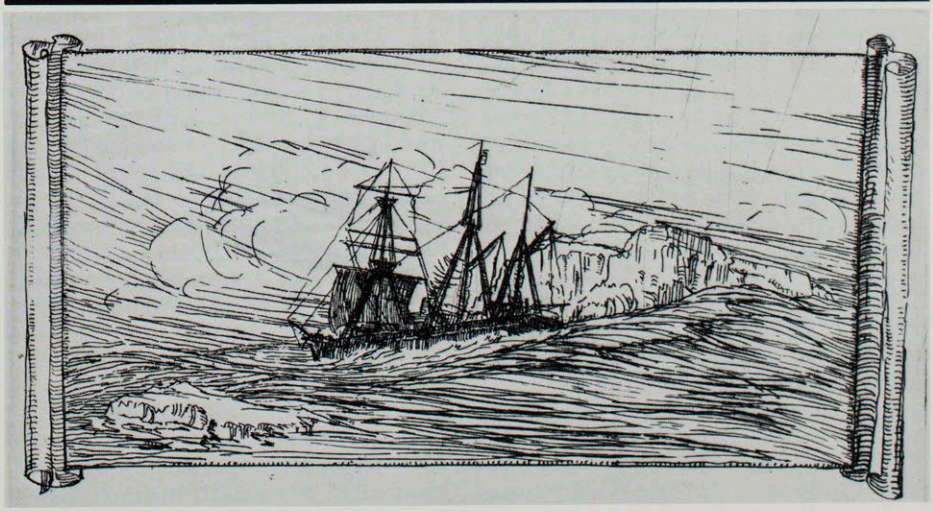
"The Title Page," Lady Shackleton's copy, now in the Scott Polar Research Institute, Cambridge, England.

PUBLISHED AT THE
WINTER QUARTERS
OF THE BRITISH
ANTARCTIC EXPED
ITION, 1907, DURING
THE WINTER MON
THS OF APRIL, MAY,
JUNE, JULY, 1908.
ILLUSTRATED WITH
LITHOGRAPHS AND
ETCHINGS; BY
GEORGE MARSTON

PRINTED AT THE SIGN OF
'THE PENGUINS'; BY JOYCE
AND WILD.
LATITUDE 77°·· 32' SOUTH
LONGITUDE 166°·· 12' EAST
ANTARCTICA

TRADE MARK

(All rights reserved)



"The Publisher's Page."

dition. He presented it to his school in Cambridge where it is shelved in a fine old library belonging to the Masters and Fellows of Christ's College. In Christchurch, New Zealand, there is a presentation copy given to a friend of the expedition. Part of the inscription in Shackleton's hand reads, "This book was made in the Antarctic." The stencilled letters on the Venesta board say, "—tarctic." It thus becomes the "Tarctic" edition. Another volume in a private United States collection is believed to have been Frank Wild's own copy.

The title page is the only one to have color other than the coral ink in the trademark and the initial letters. There is a brilliant blue auroral display. *Aurora Australis* and the dates, "1908–1909" are framed in bold scrolls. Two ships in full sail constitute the finials of the scrolls.

The publisher's page has nicely placed, "Published at the Winter Quarters of the British Antarctic Expedition, 1907, during the winter months of April, May, June, July, 1908. Illustrated with lithographs and etchings by George Marston. Printed at the sign of the 'Penguins'; by Joyce and Wild. Latitude 77,32'South – Longitude 166,12'East, Antarctica ... all rights reserved." There is a delightful double Emperor penguin trade mark in the lower right corner printed in coral ink. The verso is blank as it is for each illustration.

Shackleton wrote two short prefaces, and there is a dedication page to two ladies, "who have ever shown the deepest interest in Antarctic Exploration, and our welfare."

There are ten pieces in *Aurora Australis* and eleven full page illustrations. A provocative title page for a twelfth etching is bound towards the end of the last story, "A giant tick was investigating the carcase" (sic), but there is no such illustration in any volume. Perhaps sledging began before Marston got around to the drawing. The other two illustrations for this story are fine work with many elaborate details.

After a lithograph, "Under the Shadow of Erebus," there is an engrossing account of the first ascent of Mt. Erebus. It is written by Professor T. W. Edgeworth David. Besides climbing Erebus David led the three-man party to the South Magnetic Pole. At fifty he was the oldest member of the expedition.

Five lithographs illustrate the writings, "At The Edge of The Crater," "Night Watchman," "The Messman," "Struggle for the Broom," and "In the Stables." A sketchy lithograph of caricatures, "Four-

"Etching, 'Southward Bound,'" from the copy belonging to The Masters and Fellows of Christ's College, Cambridge, England.

teen Good and True," is tipped in rather than printed on the page. In the "Butter" copy the figures in this drawing are identified in ink, probably the hand of Shackleton.

"Midwinter Night" is by Shackleton:

"And this is the tale of the
Watchman,
Awake in the dead of the night,
Tells of the fourteen sleepers
Whose snoring gives him the
blight." (etc)

Another Shackleton poem, "Erebus," is a longer combination of Tennyson and Masefield.

"Trials of a Messman," by Raymond Priestley, is a well-written, amusing satire. "A Pony Watch," by Marston, is a pedestrian description of managing these animals on board the *Nimrod* during a great storm between New Zealand and the Antarctic. It describes life aboard ship in such seas.

"The Nightwatchman," from the Huntington Library copy.

The finest etching in the book, "Southward Bound," illustrates a poem by a man who obviously loves the sea, the surgeon, Eric Marshall. It shows the *Nimrod* in heavy seas weathering south.

"Interview with an Emperor" is an imaginative piece written by the other surgeon, A. F. Mackay. A haughty Emperor penguin with Scottish accent accosts two expedition members as poachers. The dialogue is original and amusing.

Frank Wild wrote, "An Ancient Manuscript," to describe the trials of setting up an expedition to the Antarctic. Shackleton's restless spirit and "charge," the search for funds, a ship and responsible men, are all told in language reminiscent of the King James Bible. Referring to his leader's main purpose, Wild writes, "There is set up a great pole of value, which all the Nations of the Earth do strive to possess..., and it shall also be that thy hand shall uproot the Great Pole which the wise men do call The South Pole, when I say unto thee that it shall not be forgotten of thee..." Wild continues his account of the search for expedition members, "...then took he one who had studied at the seats of learning..., and also one cunning in the art of making pictures in many colours and pleasing to the eye" (Marston). Of the trip south from New Zealand, "And the rest of the Acts of Shackleton and his people and the dangers and tribulations that did beset them, will ye find in the next book of these chronicles, which are not yet completed." The narrative is signed "Wand ER ER."

"Life Under Difficulties" is a straightforward account of the behavior of rotifers. The author, James Murray, mentions an illustration by title, "Portions of these Cape Royds Natives are shown on the Plate, Highly Magnified." But there is no such drawing. Marston, or Murray, who also sketched, may never have made the drawing, but it was intended, as there is a blank page bound in the middle of the account in the "Irish Stew" copy.

The final piece in this remarkable book, "Bathybia," is by the Australian, Douglas Mawson. This young man, who was later knighted for his own Antarctic explorations, has given us a fascinating and well written early science fiction tale for which Marston did two intriguing etchings, "Executing Evolutions in Mid Air," and "Each Sheltered Under one of the Novel Umbrellas." "Bathybia" is an imaginary journey towards the South Pole (which in reality is on a 14,000-foot-high plateau), in which explorers discover a vast crater 20,000 feet deep, with swamps, tropical streams and a lake at the bottom. Written as though it had been an actual trek and descent to below sea level in the Antarctic, the story includes daily entries in a log, descriptions of fanciful plants and fights between giant insects. The records of scientific findings and modes of travel are ingenious. Told with wry humor and a choice use of words, it is a gripping tale which turns out to be Mawson's dream between the first and second call for breakfast at the base, "Rise and Shine, you sleepers, 8:45—time for down table!"

One charming aspect of *Aurora Australis* is the whimsical accident of Day's choice of packing case boards for his covers. We've mentioned the "Butter" edition, "Bottled Fruit," "Irish Stew," and "Tarctic." One wonders where are the others: the "Hypsometer" (measures altitude with the boiling point of water) copy, the "Pemmican" edition, the "Burberry," the "Huntley and Palmers wheat-biscuit," the "Twelve pairs of," and the "This End Up" copy.

In Shackleton's second preface he pays tribute to Joyce and Wild, Marston and Day: "...and I trust that all who have a copy will think kindly of the first attempt to print a book and illustrate it in the depth of an Antarctic Winter."

"'14 Good and True,' Marston's caricature of the Members of the Expedition, except for Shackleton," from the copy in the Scott Polar Research Institute, Cambridge, England.

Mary P. Goodwin, who writes exclusively about the Antarctic, has spent years of research on this project. She is now studying more about the little-known life of the illustrator and watercolorist, George Marston.

"The Doll Lady," 1947.

THE LUCILE MORRISON DOLL COLLECTION

By KILBEE BRITTAIN

An enormous family, about a thousand members, resides in a secure storage room at the Natural History Museum of Los Angeles County in boxes in which their collector has lovingly sequestered them. They have stories to tell, as does the donor of this extraordinary collection, Lucile Phillips Morrison, much-honored educator, community service volunteer, psychologist, and author of such well-known young people's books as *The Attic Child, The Blue Bandits,* and *The Lost Queen of Egypt.*

In 1977 Mrs. Wayland Morrison donated her collection of almost one thousand dolls to the Museum. The word "collection," she explains, is not quite accurate. Most of the dolls are an extension of her doll family, a nucleus of beloved companions which still reside with her, but which will eventually join the others at the Museum. The dolls are not strangers to the Museum; in the 1920's many of them were exhibited there during the Christmas season.

This doll family is of unusual interest not because it is the most comprehensive of a particular period, or the most representative of the finest era of German expertise, or full of the best bisque heads, but because it was loved, wanted, chosen for itself.

Lucile Phillips was born in Los Angeles on 30th Street near Hoover, only a few blocks from where the Museum now stands.

◁ *Lucile Phillips (Morrison) age seven-and-one-half, with her doll "Grace" and a baby cousin in 1904. Grace is wearing her best dress, made of blue China silk edged with hand-made lace, over lace-trimmed petticoat and panties. Grace still wears this in 1980, but her golden curls have changed to brown.*

Lucile Phillips Morrison's "Nuclear Family:" "Blue Bell," "Miss Lavendar," and "Grace," her first dolls given her when she was six years old in 1902, and "Thelma," a 1905 gift after the Phillips family returned from Europe.

Her grandfather, Dr. Milton E. Phillips, was Dean of the Liberal Arts College of the University of Southern California. When she was six her parents moved to Stockton for five years before returning to Los Angeles in 1911. During that time Lucile did not go to school and did not know many other children because she travelled so often with her parents, but she experienced rare companionship in close association with a most unusual mother and father.

For her sixth birthday Lucile received three dolls that became the nucleus of her doll family: Miss Lavendar, whose pink kid body wears a petticoat which is a replica of one of Lucile's own made by her grandmother, and a dress that is a copy of one of Lucile's mother's gowns (the original was donated to the Art Museum); Bluebell, a delicate, blue-eyed child; and Grace, who travelled with her to Europe in 1904 (see photo). When Lucile was nine she received Thelma, her most precious big doll, which later sat on a chair in her room at home while Lucile was at Vassar College and all the other dolls were put away for safe-keeping.

On that first family trip to Europe, Lucile saw children in many different national costumes, and her father said she might have one doll from each country visited. The family began to grow. The little girl found, however, that she could not easily adopt the foreign dolls into her family. Her dolls could not

Photos by Larry Reynolds

A case of antique doll clothes

Additions to the Nuclear Family: A Dresden doll which said "Mama" and a German doll which walked by means of wheels on her shoes (notice the key in her left hand), from the Phillips family's European trip, 1904, and "Enid," with her travelling case, 1907.

"talk" to dolls so different in language, personality and dress. So her mother had a case made for the foreign dolls, which then became a "collection." One Japanese doll was given her by George Shima, the Japanese "potato king" of California. One Dresden doll can still "walk" with wheels under her shoes, but another German one has lost her voice.

Playing dolls was a complex pastime for the imaginative little girl. Dolls were not just to be fed and put to bed. They were to be conversed with, as friends. The dolls sometimes took on the personalities of characters from favorite books, but usually Lucile felt herself the head of an orphanage, bringing together children who might otherwise never have a family, reading to them, caring for them.

When she grew up, Lucile still cared for her dolls, and kept enlarging the group by "rescuing" particularly appealing dolls she saw in antique stores on her various travels. She took each rescued doll home, repaired it, washed its delicate, hand-made clothes, and stored it in a large chest of drawers in the attic.

Soon the attic drawers were full, but hardly anyone knew about the dolls until 1926, when the Los Angeles County Museum planned a Children's Month for December, and needed a doll collection to exhibit. Mrs. Morrison brought her dolls out of the attic for their first of many public appearances. The children's wing was in the east side of the Museum by the rose

◁ *"Mona Quincy Morton" is an 1830's Kansas doll originally from Germany. Her papier-mâché head has molded and painted black hair covered by a quilted bonnet. Covering her kid and cloth body are a white camisole with two petticoats and ankle-length pantalets, a print dress with peplum, and a striped cape and capelet. "Mona" was a favorite with the* Doll Dreams *authors. 26½".*

Largest doll (32") in the collection, given Mrs. Morrison by Dr. Roberta Crutcher, is German, 1900–1908. The bisque shoulder head has eyes that close. The cloth and kid body is dressed in a blue chiffon over blue silk 1920's-style dress.

garden, in the basement. Mrs. Morrison worked as a volunteer with curator Virginia Smith in setting up the exhibit each year.

Mrs. Morrison conceived the idea of a story contest for which children would write about their favorite doll in the collection. "Each doll will tell a story, if you let it," Mrs. Morrison says, "if you sit quietly and listen." The contest was a success, and the best stories were collected and published as *Doll Dreams.* In a few years, 100 children were entering the contest.

Mrs. Morrison funded the printing, and most of the limited edition of 500 was given to child authors and their families. *Doll Dreams* were published in 1927, 1928, 1930, 1932, and Mrs. Morrison became known as The Doll Lady. The artist responsible for creating illustrations for the first three volumes was Helen Candler Miller, mother of Robert P. Miller, Jr., present Museum Alliance Chairman. Later a friend was exhibiting works of young contemporary artists including Millard Sheets, Paul Landacre, Jessie Arms Botke, Arthur Millier, Franz Geritz, and Ralph Holmes. She asked Mrs. Morrison to bring her favorite old wooden dolls to add to the exhibit. They were set up around a miniature tea table and so charmed the artists that all six volunteered to illustrate the 1932 volume of *Doll Dreams.*

During the ten years the Morrison dolls were seasonally exhibited, there were doll-making as well as doll-story-writing contests. Mrs. Morrison remembers that the boys preferred the

"Sally Joe Sutton" is a 13½" carved wood peg jointed doll with carved "fork" hands and a nailed-on hair wig, covered by a quilted "covered-wagon" bonnet. She was apparently handmade in the late nineteenth century. She wears a blue quilted slip with pink and white flowered lining, a blue silk dress, a grey silk apron, and red leather shoes.

THE DOLL LADY paused before a narrow brick building and inspected the contents of a crowded window with a practiced eye. Seen through a blur of dust, the litter of quaint rubbish was tantalizing: snuff boxes, a cracked china dog, two carved whale's teeth, and leaning against a trunk, a wooden doll with a wicked twinkle in her painted eyes. The Doll Lady smiled. She had found four dolls in her journey up and down Charles Street, but the other prim ladies faded to colorless shadows before this impish creature who could remain so gay even in the face of misfortune. There was no doubt about it, she must be rescued from the clutches of her captor no matter how high the ransom!

The Doll Lady was playing a game—a secret game of her own making. "Attic-Shopping" she called it, and never until the end of the day could she tell who would be the winner. The rules were quite simple. For hours she walked the streets where Antique Shops flourished, and in each shop selected one article which, above all others, she longed to own. Now with the Fall dusk drifting down the narrow street, she consulted the little red book where the treasures were listed, and slowly, regretfully crossed them off one by one: the pine cradle, the corn-husk Indian, the wax baby, the patchwork quilt. It was hard to give them up, but that was part of the game. Only one could she have, and today that one was the strange wooden creature with the wicked twinkle in her painted eyes, and the delicate hand-made clothes.

From "Attic Shopping," by the Doll Lady, in *Doll Dreams*, 1932.

old dolls hand-made with a penknife by some father of pioneer days, or in a cave during The Seige of Vicksburg.

The dolls made numerous visits to branch libraries and schools, where the Doll Lady talked about their histories and "the delights of make-believe."

Now, after forty years' absence, the dolls have returned to the Museum. Mrs. Morrison's gift nearly doubles the Museum's doll collection. It contains fine examples of workmanship from many periods and places, including homemade dolls, French milliner's models, dolls made by German manufacturers living in France. Most were antiques when Mrs. Morrison bought them. She has also donated an extensive collection of miniature furniture originally acquired so the eighteenth and nineteenth-century doll ladies would seem at home in their museum surroundings. Some of the finest are examples of "salesman's samples" carried by travelling salesmen. The fifty-three boxes of dolls comprise an eclectic collection.

The dolls are meticulously stored in 130 folding blanket boxes Mrs. Morrison scoured the Los Angeles area to find. She lined every box with a sheet of heavy cardboard to which each doll is secured with bias tape or shoelaces. Extremely fragile dolls were cradled in padding. The boxes are closed with luggage straps, each box labelled on both sides and at either end. Mrs. Morrison's desire to donate the dolls already packed for storage

"Vicky" is a 13" hand-carved wooden doll made by Civil War refugees hiding in caves outside Vicksburg in 1865. She has a nailed-on wig and cloth legs.
▽

"Ellen May," from Boston, has a papier-mâché shoulder head with molded blonde hair, inset blue glass eyes, cloth body, and kid arms. She wears a sleeveless calf-length cotton dress of white figures on a blue background, pantalets with three rows of tucking, a lace-trimmed half slip, and a black coat beaded and trimmed at the hem-line with lace. 17".
▽

"Patience" comes from the Old Witch House in Salem. Made in the 1840's, she has a slot in the top of her head which was cut during the Civil War period to smuggle messages. She wears a two-piece green-gray silk dress with lace collar, shawl, and bonnet. Pantalets are elaborately lace-trimmed.

is unusual, even among the most generous of donors. She has catalogued the collection in a book with the number, name, history, and color photograph of each doll. "The best story you get about a doll is from the original owner, or someone who bought it from the owner," Mrs. Morrison says. "I found out that one of the dolls was tied around the waist and hung from the parlor wall. If the little girl was very good, her grandmother let her hold it—but never left her with it!"

A number of researchers have already used the collection, and several dolls are currently on loan to an El Camino College museum studies class. "Dreams of Christmas," the History Division Christmas exhibit and gift to museum visitors, contained a number of dolls and miniatures from the Lucile Phillips Morrison Collection.

Soon a large dollhouse will be added to the Morrison gift. This will be one of the major elements of next year's Christmas exhibit. In the mid-1930's Mrs. Morrison had a carpenter make a simplified version of the home she and Dr. Morrison had designed and built on Plymouth Boulevard in the Windsor Square area of Los Angeles. With the help of the whole family she gradually papered and furnished the house, which was not a "collector's item" but a real playhouse for children to enjoy. Now she is in the process of refurbishing the garden after years of neglect in the basement where once grandchildren loved

"Mary Bell" is a 25" poured wax shoulder head doll from the 1800's with cloth body and kid arms. She has glass eyes, pierced ears, and a glued-on wig. She wears pantalets, two slips, an elaborately shirred dimity dress, straw hat, red shoes, beige socks.

The dolls are stored in padded blanket boxes, each meticulously labelled and catalogued.

"Irene Toehler," 22", is from Henderson, Minnesota, 1870. She has a wax over papier-mâché shoulder head with blue glass sleep eyes, a glued-on wig, and a cloth body. She wears a light blue torso dress with a pleated band at the hem, an apron, a dark blue sailor-type coat with light blue trim and a dark blue bonnet.

to play.

Artist Harriet Hammond, who specializes in miniature doll reproductions, is now making a doll family, on a scale of one inch to one foot, modelled from a 1930 photograph of Dr. and Mrs. Morrison, their four sons and one daughter. The artist is using early Kestner molds from Germany. The doll heads, arms below the elbows, and legs below the knees are bisque. The artist paints the faces, uses mohair wigs, and makes the clothes.

Lucile Morrison believes that dolls are an important part of a child's life, a stimulus to the imagination. She says dolls should never be manufactured with a prefabricated name and personality. A child should be free to name her dolls. They develop their own personalities. "Every child should also be encouraged to recognize that potential dolls are everywhere. Flowers can be dolls. Fuschias and thistles are like ballet dancers..."

While their larger family waits at the Museum, Thelma, Grace, Bluebell, and Miss Lavendar sit serenely in Mrs. Morrison's Arcadia home, "always watching," as in a passage from *Doll Dreams*, "for the children who smile at them from faded, elderly eyes — the children of another generation who have never quite grown up."

Kilbee Brittain, an associate editor of TERRA, is a well-known free-lance writer.

(Continued from page 2) days into remote sites of the Marble and Providence Mountains of San Bernardino County to search for remains of this mysterious animal. Although none of the giant arthropods were found, numerous other marine fossils that lived at the same time were gathered for the research collections of the various institutions. It is hoped that future trips will recover additional specimens that will permit reconstruction of this elusive large animal, which is known to occur in British Columbia and Pennsylvania as well as southern California.

PELECANIFORMES RESEARCH

Dr. Ralph Schreiber and his wife, Betty Anne, recently spent a week at the Rothschild Museum at Tring, outside London (the ornithology section of the British Museum) where they worked on molt and taxonomy of the pelecaniformes. Afterwards they attended a symposium of Birds of the Sea and Shore, sponsored by the Southern African Seabird Group in Capetown, South Africa. Dr. Schreiber presented a paper on his pelican work and provided the symposium summary for the group. A week was spent on Dassen Island observing the behavior of the great white pelican and a final week in St. Lucia National Park watching the behavior of the pink-backed pelican as part of the Schreibers' comparative study of the behavior of pelecanidae.

SOUTH AMERICAN FISHES

Camm C. Swift, Associate Curator in the Ichthyology Section, has initiated an ichthyological field program in the Amazonian highlands of northeastern Peru, in conjunction with the University of California at Berkeley, and funded by the National Science Foundation. The project will attempt to determine what kinds of freshwater fishes live in this region; to monitor a specific site for a period of twelve months to determine how these fish populations vary; and to assist anthropologists in establishing a dictionary of names for all freshwater fishes that the local Indians know. The program began in September 1979 and is expected to continue for at least a year. Dr. Swift will be in the field from January through March 1980.

MUSEUM PUBLICATIONS

Robin Simpson is the new head of Museum Publications, responsible for editing all the science and history publications published by the Museum. She previously had been working as a consulting editor and writer, and has been associate editor, designer, and writer for the Coastal Water Project, now in Long Beach.

LOS ANGELES COUNTY NATURAL HISTORY MUSEUM

LEON G. ARNOLD
Acting Director
GURDON WOODS
Assistant Director
DR. THEODORE DOWNS
Chief Curator, Earth Sciences
DR. DAVID WHISTLER
Acting Chief Curator, Earth Sciences
DR. FRED S. TRUXAL
Chief Curator, Life Sciences
DR. HARRY KELSEY
Chief Curator, History
RICHARD LIPSCOMB
Chief of Education
ROBERT SPANGENBERG
Chief of Exhibitions

NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY BOARD OF GOVERNORS

Franklin Otis Booth Jr.
Richard Call, M.D.
Secretary
Mrs. Justin Dart
Vice-President
Alfred M. Esberg
Albert B. Glickman
Ed N. Harrison
President
Ivan J. Houston
Don Kott
Douglas J. Macdonald
Morris Mesler, M.D.
Richard C. Seaver
Mynatt Smith
Mrs. E. Hadley Stuart Jr.
Nancy Peterson Walter
John G. Wigmore
Dr. M. Norvel Young

LOS ANGELES COUNTY MUSEUM OF NATURAL HISTORY FOUNDATION BOARD OF TRUSTEES

B. E. Bensinger III
Franklin Otis Booth Jr.
Judge Wm. Matthew Byrne Jr.
George V. Caldwell
Richard Call, M.D.
Assistant Secretary
Richard P. Carlsberg
Mrs. Arthur Lee Crowe Jr.
Mrs. Justin Dart
Vice-President
William W. Drewry Jr.
Chairman
Mrs. David Duque
Alfred M. Esberg
Albert B. Glickman
Ed N. Harrison
Assistant Treasurer
Lewis J. Hastings
David W. Hearst
Norman O. Houston
Mrs. Max K. Jamison
Douglas J. Macdonald
Charles O. Matcham
G. Everett Miller
Robert P. Miller
Vice-President
George C. Page
Mrs. Richard W. Schuur
Richard C. Seaver
Treasurer
Mynatt Smith
Richard Steele
Mrs. James Stewart
Mrs. Franz Talley
Richard S. Volpert
President
Mrs. Hal Wallis
John G. Wigmore
Dr. M. Norvel Young
Secretary

NATURAL HISTORY MUSEUM ALLIANCE BOARD OF DIRECTORS 1978–1979

EXECUTIVE COMMITTEE

Robert P. Miller, Jr.
Chairman of the Board
Mrs. David Duque
1st Vice Chairman
Gordon S. Bodek
2nd Vice Chairman
Mrs. Michael Dart
3rd Vice Chairman
Mrs. Richard Schuur
Secretary
John G. Wigmore
Immediate Past Chairman
Wiley Blair, 3rd
Member at large

ELECTED BOARD

A. F. Mike Atlee
Lee Bronson
Henry Clifford
Mrs. Robert Davidson
Mrs. Suzanne S. Dragge
Thomas Duque
Ronald M. George
A. Frederick Gerstell
Lewis J. Hastings
Conrad C. Jamison
Lawrence L. Jeffries
Mrs. Kenneth Leventhal
Ernest M. Lever
John L. Meek
Mrs. Joseph Messler
Mrs. Ronald W. Miller
Mrs. Carlton H. Paul
John Sadler
Mrs. Richard Seaver
Mrs. James Stewart
Mrs. Irving Stone
Mrs. Robert Tuttle
Harry Tytle

HONORARY MEMBERS

Mrs. Bruce Belt
Mrs. Richard Bergen
Mrs. M. L. Brittain III
Mrs. John Callery
John F. Cameron
Mrs. Robert Edwards
Mrs. Robert Feinerman
Frank E. Grant
Mrs. Allan Herbert
Mrs. Mortimer Kline
Mrs. Russel Kully
Mrs. Max Mintz
Peter C. Parfitt
Mrs. Paul O. Platt
Mrs. Thomas Reddin
Mrs. Robert Rusack
Mrs. Katherine Schwarzenbach
Melvin Shaw
Mrs. Leon Singer

HONORARY LIFE MEMBERS

Herbert Friedmann
Ed. N. Harrison
Mrs. Maurice Machris
Ruth Mahood
Charles O. Matcham

EX-OFFICIO BOARD MEMBERS

Mrs. Ronald Leuschner
Mrs. Ewing Seligman

RESEARCH ADVISOR

Harry Pack

ADMINISTRATIVE SECRETARY

Frances S. Kellough

MUSEUM ALLIANCE MEMBERSHIP

Museum privileges and pleasures include:

Free admission for your immediate family (to age 18) at both the Natural History Museum and the George C. Page Museum of La Brea Discoveries.

Subscription to TERRA Magazine, the Museum Members' Quarterly, one of America's most colorful and informative nature magazines, a national award winner.

TERRA Calendar of Events to keep you current on activities of the Museum.

Discounts at the gift and book shops at both Museums, on ethnic arts, artifacts, curios, books, study guides, etc.

Invitations to preview receptions for new exhibitions, and to the special behind-the-scenes annual open house.

Family programs such as films, lectures, concerts, outings.

Travel program for Alliance members only. Mini-Trips to places like Baja California's ancient art. Big Trips to places like China and Mongolia.

Alliance Membership dues are tax deductible in accordance with the law.

I wish to apply for membership in the Museum Alliance. I understand my membership card* will admit my immediate family.

Student	$15.00 annually (With I.D.)
Family, or individual	$25.00 annually
Contributing	$50.00 annually
Patron	$100.00 annually
Life $1000	(One payment)

*except student

Make checks payable to Museum Alliance. Mail to Natural History Museum Alliance, 900 Exposition Blvd., Los Angeles, Ca. 90007. Alliance Information: (213) 749-3631.

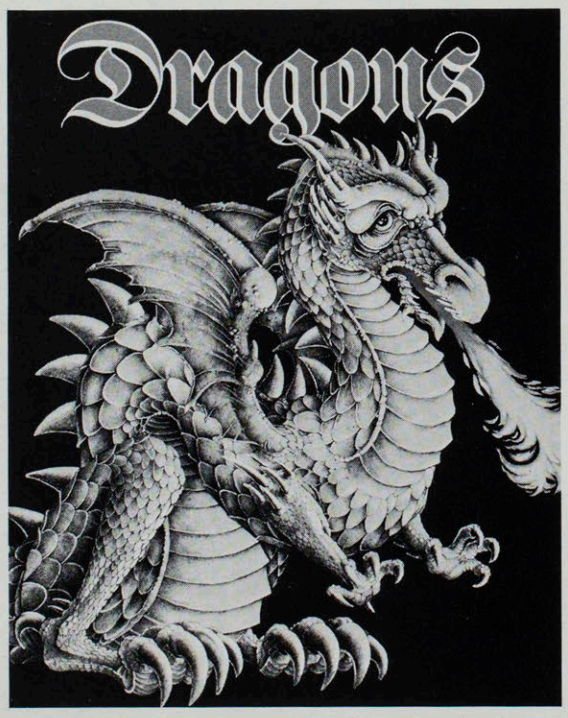
DRAGONS

The mythical monsters that have fascinated and terrified humans since the dawn of civilization are now making an appearance in our Museum Shops...

In the Ethnic Arts Shop...

Dragon Stitcheries
Dragons decorate a beautiful collection of fine antique silk stitcheries from China. from $16.00 to $160.00

In the Book Shop and the Page Museum Shop...



DRAGONS by Peter Hogarth and Val Clery
This engaging and lavishly illustrated study traces the path of dragons from ancient to modern times in terms of art, prose, religion, and folklore. $16.95

The Ethnic Arts Shop
Natural History Museum
900 Exposition Blvd.
Los Angeles, Calif. 90007

The Page Museum Shop
George C. Page Museum
5801 Wilshire Blvd.
Los Angeles, Calif. 90036

The Book Shop
Natural History Museum
900 Exposition Blvd.
Los Angeles, Calif. 90007

Natural History Museum of Los Angeles County
Exposition Park, Los Angeles, California 90007